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# Annotated type catalogue of the Chrysididae (Insecta, Hymenoptera) deposited in the collection of Radoszkowski in the Polish Academy of Sciences, Kraków

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## Abstract

A critical and annotated catalogue of 183 types of Hymenoptera Chrysididae belonging to 124 taxa housed in the Radoszkowski collection is given. Radoszkowski type material from other institutes has also been checked. Six lectotypes are designated in Kraków (ISEA-PAN): *Chrysis acceptabilis* Radoszkowski, 1891; *C. persica* Radoczkowsky, 1881; *C. daphnis* Mocsáry, 1889; *C. lagodechii* Radoszkowski, 1889; *C. remota* Mocsáry, 1889 and *C. vagans* Radoszkowski, 1877. The lectotype of *Brugmoia pellucida* Radoszkowski, 1877 is designated in Moscow (MMU). Four new combinations are proposed: *Philoctetes araraticus* (Radoszkowski, 1890), **comb. n.**; *Pseudomalus hypocrita* (du Buysson, 1893), **comb. n.**; *Chrysis eldari* (Radoszkowski, 1893), **comb. n.**; and *Chrysura mlokosewitzi* (Radoszkowski, 1889), **comb. n.**. Ten new synonyms are given: *Chrysis auropunctata* Mocsáry, 1889, **syn. n.** of *C. angolensis* Radoszkovsky, 1881; *C. chrysochlora* Mocsáry, 1889, **syn. n.** and *C. viridans* Radoszkowski, 1891, **syn. n.** of *C. keriensis* Radoszkowski, 1887; *C. angustifrons* var. *ignicollis* Trautmann, 1926, **syn. n.** of *C. eldari* (Radoszkowski, 1893); *C. maracandensis* var. *simulatrix* Radoszkowski, 1891, **syn. n.** of *C. maracandensis* Radoszkowski, 1877; *C. pulchra* Radoszkovsky, 1880, **syn. n.** of *Spinolia dallatorreana* (Mocsáry, 1896); *C. rubricollis* du Buysson, 1900, **syn. n.** of *C. eldari* (Radoszkowski, 1893); *C. subcoerulea* Radoszkowski, 1891, **syn. n.** of *C. chlorochrysa* Mocsáry, 1889; *C. therates* Mocsáry, 1889, **syn. n.** of *C. principalis* Smith, 1874; and *Notozus komarowi* Radoszkowski, 1893, **syn. n.** of *Elampus obesus* (Mocsáry, 1890). One species is revaluated: *Chrysis chalcochrysa* Mocsáry, 1887. *Chrysis kizilkumiana* Rosa is the **new name** for *C. uljanini* Radoszkowski & Mocsáry, 1889 *nec* Radoszkowski, 1877. Pictures of seventy-seven type specimens are given.

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**Keywords**
Chrysididae, catalogue, lectotype designation, new synonym, new combination, status revived, new name

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## Introduction

Oktawiusz Wincenty Bourmeister-Radoszkowski was an expert in Hymenoptera. He was born on August 7, 1820 in Łomża (Poland), as the son of a lawyer. Thanks to his teacher, Prof. Antoni Waga, he became interested in natural history, and especially in entomology. In 1838 Radoszkowski moved to St. Petersburg (Russia) and joined the Artillery Officers School. Once graduated, he had the opportunity to visit various parts of the Russian Empire and collect insects. Later, while teaching at the Artillery Academy in St. Petersburg, Radoszkowski organised private entomological meetings with some of his colleagues, mainly officers and officials of the Russian army. Together they decided to create the Russian Entomological Society, which was founded in 1859. Radoszkowski was a very active member of the Society, collecting funds for scientific trips, publications, and the library and establishing contacts with other entomological societies in Europe. He was vice-chairman of the Society from 1861 to 1866, and then Chairman from 1867 to 1879. As a retired general in 1879 Radoszkowski settled in Warsaw (Poland), where he continued his scientific work until his death on May 13, 1895 (Dylewska et al. 1973). The Radoszkowski collection currently contains nearly 30,000 specimens, including some Hymenoptera from Eduard Friedrich Eversmann's collection, mainly Ichneumonidae.

Radoszkowski studied Chrysididae, Mutillidae, and Apoidea. He received specimens collected across the Russian Empire by officers and members of the Russian Entomological Society. Radoszkowski also exchanged insects with other European specialists (e.g. Chrysididae with du Buysson, Gribodo and Mocsáry) (P. Rosa pers. comm.). During his lifetime he wrote 112 papers, seventy-four of which related to systematics and faunistics of Hymenoptera. Radoszkowski described hundreds of new species of Hymenoptera and assigned eighty specific names to Chrysididae. Most of

these specimens were kept in his collection, with a small part of chrysidids, mainly collected by Fedtschenko in Turkestan (Radoszkowski 1877), conserved in Moscow (MMU). Nevertheless, some of Fedtschenko's specimens and types are also housed in Kraków and are easily identified by the printed labels in Cyrillic. Other types, described in other publications, and various specimens are also deposited in Berlin (MNHU), Budapest (HNHM), Genova (MSNG) and Paris (MNHN) and have been checked.

In 1898, three years after his death, Radoszkowski's wife donated his collection to the Poznań Society of Friends of Science. In 1899, some types (duplicates from the type series, but in some cases also primary types) were given in exchange to the Zoological Museum of the University of Berlin, including a few Chrysididae. In 1902 the rest of the collection was given in exchange to the Polish Academy of Arts and Sciences in Kraków, and now is housed in the Institute of Systematics and Evolution of Animals at the Polish Academy of Sciences (ISEA-PAN). Other Chrysididae types were sent by Radoszkowski to the most imporant authors of his time; this is the reason why many types are nowaday spread in other museums (du Buysson (MNHN), Mocsáry (HNHM), and Gribodo (MSNG)).

Within the Chrysididae family, three species names have been dedicated to Radoszkowski: *Primeuchroeus radoszkowskii* (Gribodo, 1879), *Cleptes radoszkowskii* Mocsáry, 1889, and *Hedychrum radoszkowskyi* du Buysson, 1893. Some additional taxa, and even some genera in different families, are also dedicated to him: *Radoszkowskius* (Mutillidae) and *Radoszkowskiana* (Megachilidae).

The Radoszkowski Chrysididae collection in Kraków is housed in four large entomological boxes and includes approximately 1,140 specimens. The collection includes 183 types of Chrysididae representing 124 taxa: seventy-one holotypes, eight lectotypes, sixty-five syntypes, and thirty-nine paralectotypes. The collection houses types described by Eversmann, du Buysson, Gribodo, Mocsáry, and, most of all, Radoszkowski himself. The specimens are arranged in the systematic order left by Radoszkowski, which follows that proposed by Mocsáry (1889).

Eversmann's Chrysididae collection is merged in the Chrysididae Radoszkowski collection in ISEA-PAN. Eversmann (1857) published only one paper on Chrysididae (Fauna Hymenopterologica Volgo-Uralensis), in which he described seven Chrysididae species: *Chrysis amoena*, *C. cylindrica*, *Elampus ambiguus*, *E. bidentatus*, *E. femoralis*, *Hedychrum flavipes* and *Parnopes popovi*. All the types of these species are preserved in ISEA-PAN and five were later redescribed by Radoszkowski (Radoszkovsky 1866).

According to the visitor diary and the registration handbook of the museum, nobody has examined the entire collection since Mocsáry (around 1889) and du Buysson (1896). Only Móczár (1997) and Bohart (in the 80s of last century) borrowed some specimens of the genus *Cleptes* and some African Chrysididae. All the Chrysididae in the Radoszkowski collection were examined by P. Rosa in June 2012, and by B. Wiśniowski from January to February 2013, with a focus on the type specimens. In order to facilitate their future identifications, all types were labelled in red with clear indications of their status.

The name "Radoszkowski" was written in his publications in different ways. Four different spellings of this name exist in published papers dealing with Chrysididae:

Radoczkowsky (1881), Radoszkovsky (1866, 1872, 1877 (1876), 1880 (1879), 1881), Radoszkowsky (1877 (1876), 1884), and, the most common, Radoszkowski (1877, 1887, 1889, 1890 (1889–1890), 1891a, 1891b, 1893a, 1893b).

The aim of this article is to provide label information, bibliographic data, current status, remarks for the type material, and to resolve confusion regarding previous lectotype designations, incorrect combinations, synonymies, placement in species groups and repository of these types.

## Material and methods

Terminology and classification of the genera follow Kimsey and Bohart (1991), classification of species and species groups follow Fauna Europaea (Rosa and Soon 2012), Linsenmaier (1959, 1968, 1987, 1994, 1997, 1999), and Rosa (2006a). Abbreviations used in the text are as follows: F-I, F-II, F-III, etc. = flagellum I, flagellum II, flagellum III and so on; S-II = second metasomal sternum; S-III = third metasomal sternum; TFC = transverse frontal carina.

The handwritings of Radoszkowski, Eversmann, du Buysson, and Mocsáry are easily recognized (Rosa 2009) and are helpful in the identification of the type material; almost all of the labels are easily legible, even those in Cyrillic. In only one case the labels have to be interpreted: some taxa described by Radoszkowski in 1891 (*Chrysis ambigua*, *C. murgrabi*, *C. nova*, *C. semenovi*, *C. singula*, *C. subcoerulea*, *C. unica*) bear the same labels – "TR-CAP" [Trans-Caspia] or Saraks [in 2 cases], but not the locality included in the text (Ashkabad). The same inconsistency was observed in other museums with types by Radoszkowski (1891).

Fedtschenko's codes: specimens collected by Fedtschenko and published by Radoszkowski (1877) bear recognizable printed locality labels in cyrillic. The dating labels have a complicated code: the day is written on a square coloured label; the collecting month is related to the colour (lilac = April; pink = May; blue-green = June; yellow = July; dark blue = August; orange = September); the year is given by different marks: no marks (1879), black line on lower side (1870), and red line on upper side (1871). This code is necessary in order to recognize the type material in collection. The detailed list of the localities visited by Fedtschenko during his expedition to Russian Turkestan and the Kokan Khanate is given by Baker (2004).

Some selected types are here illustrated, such as the newly designated lectotypes. Photographs of the types were taken with Nikon D80 connected to the stereomicroscope Togal SCZ and stacked with the software Combine ZP; the white calibration of the photocamera was applied to reduce the blue effect of the neon light of the Togal microscope.

Types and other specimens have been examined from the following institutions:

**HNHM** Hungarian Natural History Museum, Budapest, Hungary.
**ISEA-PAN** Institute of Systematics and Evolution of Animals' collection at the Polish Academy of Sciences, Kraków, Poland.

| | |
|---|---|
| **LZM** | Lund Zoological Museum, University of Lund, Sweden. |
| **MHNG** | Natural History Museum, Genève, Switzerland. |
| **MMU** | Zoological Museum, Moscow Lomonosov State University, Moscow, Russia. |
| **MNHN** | National Natural History Museum, Paris, France. |
| **MNHU** | Natural History Museum of the Humboldt-University, Berlin, Germany. |
| **MSNG** | Museum of Natural History"G. Doria", Genoa, Italy. |
| **NMLS** | Natur Museum, Luzern, Switzerland. |
| **ZIN** | Zoological Institute, St. Petersburg, Russia. |
| **ZMUC** | Zoological Museum, University of Copenhagen, Denmark. |

## Results and discussion

### Types housed in the Radoszkowski collection

***Brugmoia pellucida* Radoszkowski, 1877**
Plate 1

*Brugmoia pellucida* Radoszkowski 1877: 26.

**Type locality.** "Habitat in desertis Kisil-kum", "Объ формы пойманы 10 и 15 мая 1871 г. въ пескахъ Кизилъ-кумъ" [Both specimens collected on the 10th and 15th of May 1871 on the sand of Kisil-kum].

**Paralectotype** 1♂ [box 62]: golden rounded label // *Brugmoia pellucida* [handwritten by Radoszkowski] // Кизилъкумъ [printed] // 12. [pink label with red line] // 48 [printed].

**Remarks.** Kimsey and Bohart (1991) listed the holotype male in MMU, but the species was described on a syntypic series based on females (*"long. 8-9 mm."*). We examined the specimen housed in MMU, which it is truly a female bearing the following labels: 10. [printed on pink label with red line] / Кизилъкумъ [printed] / *Brugmoia pellucida* Rad. [handwritten red label] / 10.V.1869 [handwritten after Radoszkowski]. We designate it as the lectotype of *B. pellucida* since the specimen housed in the Radoszkowski collection in ISEA-PAN is a male, and not a female, and it was collected on a different day.

Anyway, we consider the specimen in ISEA-PAN as the second syntype and therefore as the paralectotype, even if two discrepancies are found. The different date (the 12th and not the 15th of May 1971) could be a case of *lapsus calami*, since the red line is somehow covering the day number. The different sex could be also a case of *lapsus calami*; indeed, the specimen is bearing the main features listed in the description and the sexual dimorphic characteristics are not so obvious as in other *Euchroeus* species; Bohart himself (Kimsey and Bohart 1991) confused the sex of the specimen housed in MMU. Evidence that the specimen in ISEA-PAN is the second syntypes are: it was

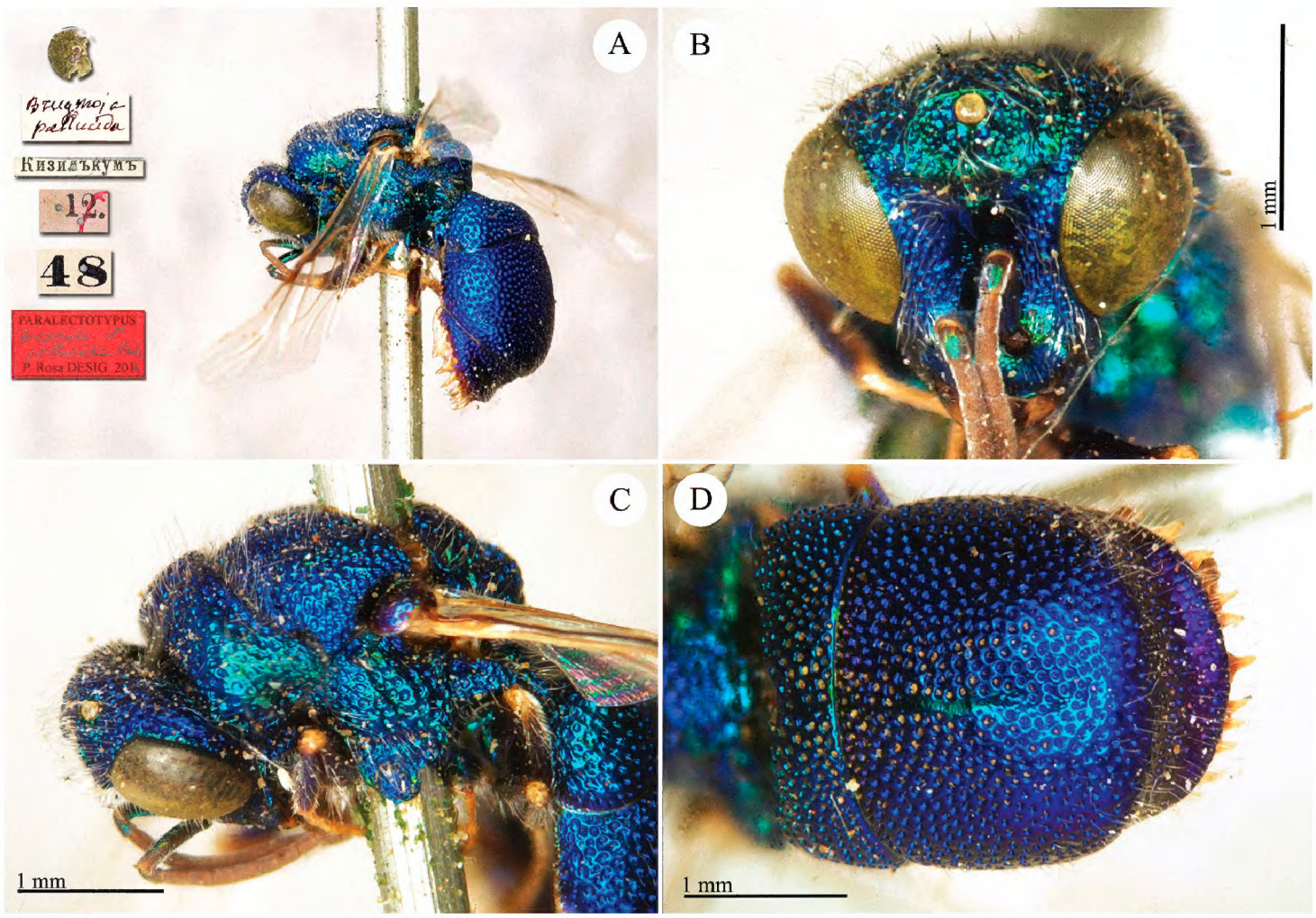



**Plate 1.** *Brugmoia pellucida* Radoszkowski, 1877, paralectotype. **A** Habitus, lateral view **B** head, frontal view **C** head and mesosoma, lateral view **D** metasoma, dorsal view.

identified by Radoszkowski as *Brugmoia pellucida* and not as *Euchroeus quadratus*, the second *Euchroeus* collected by Fedtschenko in his journeys (Radoszkowski 1877); it was collected in the same locality, month and year (*E. quadratus* was collected on Mt. Karak on the 7th of May); no other specimen of *Brugmoia pellucida* identified by Radoszkowski or collected by Fedtschenko was found in MMU, HNHM, MNHN, MNHU and MSNG. In Kimsey and Bohart (1991: 296), it is listed under the name *Brugmoia pellucida* Radoszkowski. The generic name *Euchroeus* Latreille was conserved by the International Commission on Zoological Nomenclature (ICZN, Opinion 1906).

**Current status.** *Euchroeus pellucidus* (Radoszkowski, 1877) (transferred by du Buysson (in André) 1892: 255).

### *Chrysis abyssinica* Radoszkowsky, 1877

*Chrysis Abyssinica* Radoszkowsky 1877 (1876): 148.

**Type locality.** "Apporté par M. Raffray d'Abyssinie".

**Holotype** [sex unknown] [box 62]: golden rounded label // label with metasoma [lost] // Abyss. Raffray [printed] [light blue label] // *abyssinica* [handwritten by Radoszkowski] // 59 [printed].

**Remarks.** The type is seriously damaged, it lacks the metasoma.

**Current status.** *Praestochrysis spina* (Brullé, 1846) (synonymised by Kimsey and Bohart 1991: 534).

### ***Chrysis acceptabilis*** **Radoszkowski, 1891**

Plate 2

*Chrysis acceptabilis* Radoszkowski 1891a: 197.

**Type locality.** "Saraks".

**Lectotype** ♂ (here designated) [box 61]: golden rounded label // Tr-Cap Saraks // *acceptabilis* [handwritten by Radoszkowski].

**Paralectotypes** 2♂♂ and 1♀ [box 61]: golden rounded label // Tr-Cap Saraks.

**Remarks.** In collection, five specimens under the name *Chrysis acceptabilis* R. bear the same collecting label. We have excluded one of them from the type series, because it belongs to another species (*C. chlorochrysa*, in the *C. viridissima* group) and does not match the original description.

Kimsey and Bohart (1991: 428) synonymised *C. acceptabilis* Radoszkowski with *C. kokandica* Radoszkowski and placed it in the *C. splendidula* group. However, the specimen labelled by Radoszkowki is consistent with the interpretation of *C. acceptabilis* provided by Linsenmaier (1968: 113). Based on its very short flagellomeres (F-I and F-II), Linsenmaier placed *C. acceptabilis* in the *C. cerastes* group. For this reason, Rosa et al. (2013: 15) consider *C. acceptabilis* and *C. kokandica* as two valid species. The examination of the type in MMU confirmed that *C. kokandica* belongs to the *C. splendidula* group and it is a different species, not conspecific with *C. acceptabilis*. To avoid future misidentifications we designate the male specimen labelled by Radoszkowski (Plate 2) as the lectotype of *C. acceptabilis*.

**Current status.** *Chrysis acceptabilis* Radoszkowski, 1891.

### ***Chrysis ambigua*** **Radoszkowski, 1891**

Plate 3

*Chrysis ambigua* Radoszkowski 1891a: 188.

**Type locality.** "Ashabad".

**Syntype** 1♀ [box 61]: golden rounded label // Trans-Caspia [printed] [yellow label] // *ambigua* [handwritten by Radoszkowski].

**Remarks.** The type is damaged. It lacks the left forewing; the metasoma and two legs are glued to the locality label. Another female specimen considered as syntype was found in HNHM bearing the labels: Trans-caspia / ~~*anceps*~~ n. sp. *ambigua* Rad. Ashabad <handwritten by both Radoszkowski and Mocsáry> / *Chrysis mutabilis* v.

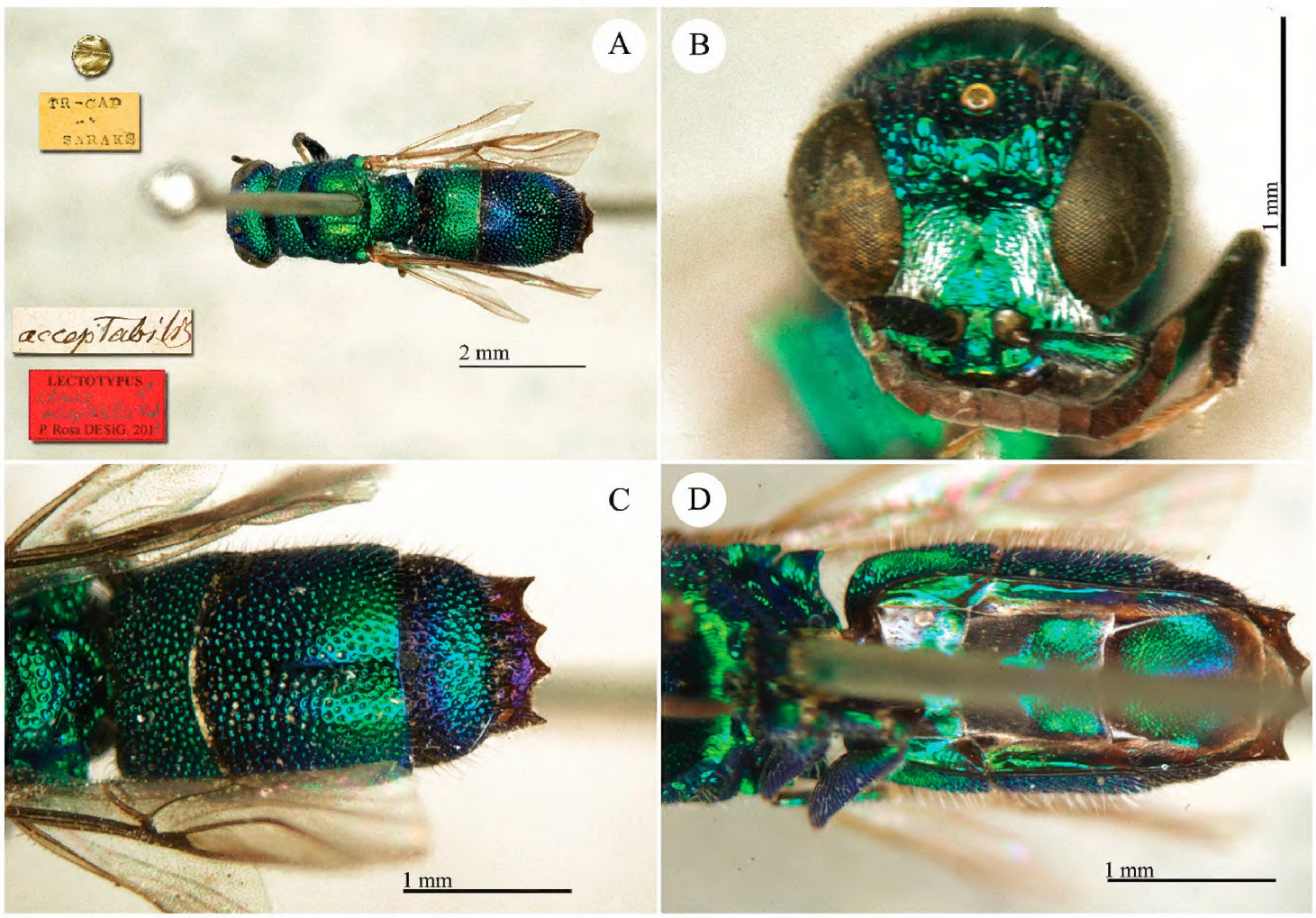



**Plate 2.** *Chrysis acceptabilis* Radoszkowski, 1891, lectotype. **A** Habitus, dorsal view **B** head, frontal view **C** metasoma, dorsal view **D** metasoma, ventral view.

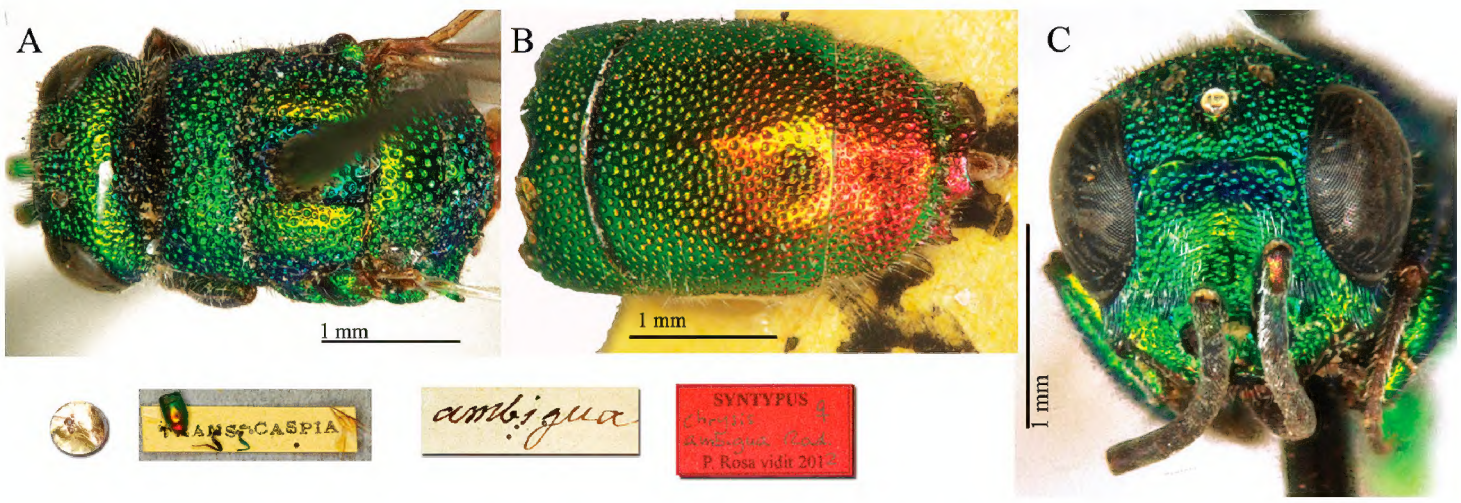



**Plate 3.** *Chrysis ambigua* Radoszkowski, 1891, syntype. **A** Head and mesosoma, dorsal view **B** metasoma, dorsal view **C** head, frontal view.

*ambigua* Rad. det. Mocsáry / id nr. 115650 HNHM Hym. coll. Another syntype is housed in MNHU.

Linsenmaier (1959: 175; 1968: 112) and Rosa et al. (2013: 15) placed it in the *C. cerastes* group, but Kimsey and Bohart (1991: 381) placed it in the *C. taczanovskii* group.

**Current status.** *Chrysis ambigua* Radoszkowski, 1891.

**Figure 1.** *Chrysis amoena* Eversmann, 1857, holotype, habitus, dorsal view.

***Chrysis amoena* Eversmann, 1857**
Figure 1

*Chrysis amoena* Eversmann 1857: 562.

**Type locality.** "Hab. in campis transuralensibus".

**Holotype** ♀ [box 62]: golden rounded label // *Chrysis amoena* Evm. [handwritten by Eversmann] // brown rounded label // *Omsk* Ust K - V. [handwritten].

**Current status.** *Pentachrysis amoena* (Eversmann, 1857) (transferred by Kimsey and Bohart 1991: 521).

***Chrysis analis* var. *incerta* Radoszkovsky, 1880**

*Chrysis analis* var. δ *incerta* Radoszkovsky 1880 (1879): 145 *nec* Dahlbom, 1854.

**Type locality.** "Caucase" [written in the introduction].

**Holotype** ♀ [box 61]: golden rounded label // Erivan [handwritten] // 72 [printed] // *incerta* [handwritten by Radoszkowski] // *distincta* Mocs. [handwritten by Mocsáry] // *incerta* Rad *Distincta* Mocs [handwritten by Radoszkowski].

**Remarks.** The holotype lacks fore-legs, as well as the mid- and left hind-legs. It belongs to the *C. cerastes* group.

**Current status.** *Chrysis distincta* (Mocsáry, 1887), replacement name for *C. analis* var. *incerta* Radoszkovsky, 1880.

### *Chrysis analis* var. *perrisi* Radoszkovsky, 1880

Plate 4

*Chrysis analis* var. β *Perrisi* Radoszkovsky 1880 (1879): 144.

**Type locality.** "Caucasus" [written in the introduction].

**Syntype** 1♀ [box 62]: Caucasus [printed].

**Remarks.** The name is dedicated to Abeille de Perrin and the name *perrisi* is an incorrect original spelling. Radoszkowski (1889: 25) emended the name *perrisi* to *perrini* ("*faute d'imprimerie*"). The name *perrini* was later accepted by Mocsáry (1889: 454; *Perrisi* "*e mando typographico secundum auctorem pro Perrini*"), Dalla Torre (1892: 43, sub *C. perrinii*), du Buysson (1896: 17), Bischoff (1913: 47), Trautmann (1927: 171), Linsenmaier (1987: 151), but was considered as an invalid emendation by Kimsey and Bohart (1991: 382). Kimsey & Bohart placed *C. perrini* in synonymy of *C. analis* Spinola. We follow the interpretation given by Linsenmaier (1987), who considered *C. perrini* as a valid species. The second male syntype is housed in MNHU. It belongs to the *C. comparata* group.

**Current status.** *Chrysis perrini* Radoszkovsky, 1880 (emended by Radoszkowski 1889).

### *Chrysis analis* var. *rubescens* Radoszkovsky, 1880

Plate 5

*Chrysis analis* var. γ *rubescens* Radoszkovsky 1880 (1879): 144.

**Type locality.** "Caucase" [written in the introduction].

**Holotype** ♀ [box 61]: golden rounded label // Nikolajewka [handwritten] // Erivan [handwritten] // 68 [printed] // *rubescens* [handwritten by Radoszkowski]

**Remarks.** The type is damaged, without both right wings and right mid-leg.

*C. analis* var. *rubescens* was synonymised by Trautmann (1927: 188) with *C. analis* Spinola, 1808 and his interpretation was followed by Kimsey and Bohart (1991: 382). But the type of *C. analis* var. *rubescens* shows some differences with the typical European specimens of *C. analis*, in the shape of head, different sculpture and black spots on S-II. The *C. analis* subgroup needs revision.

**Current status.** *Chrysis analis* Spinola, 1808 (synonymised by Trautmann 1927: 188).

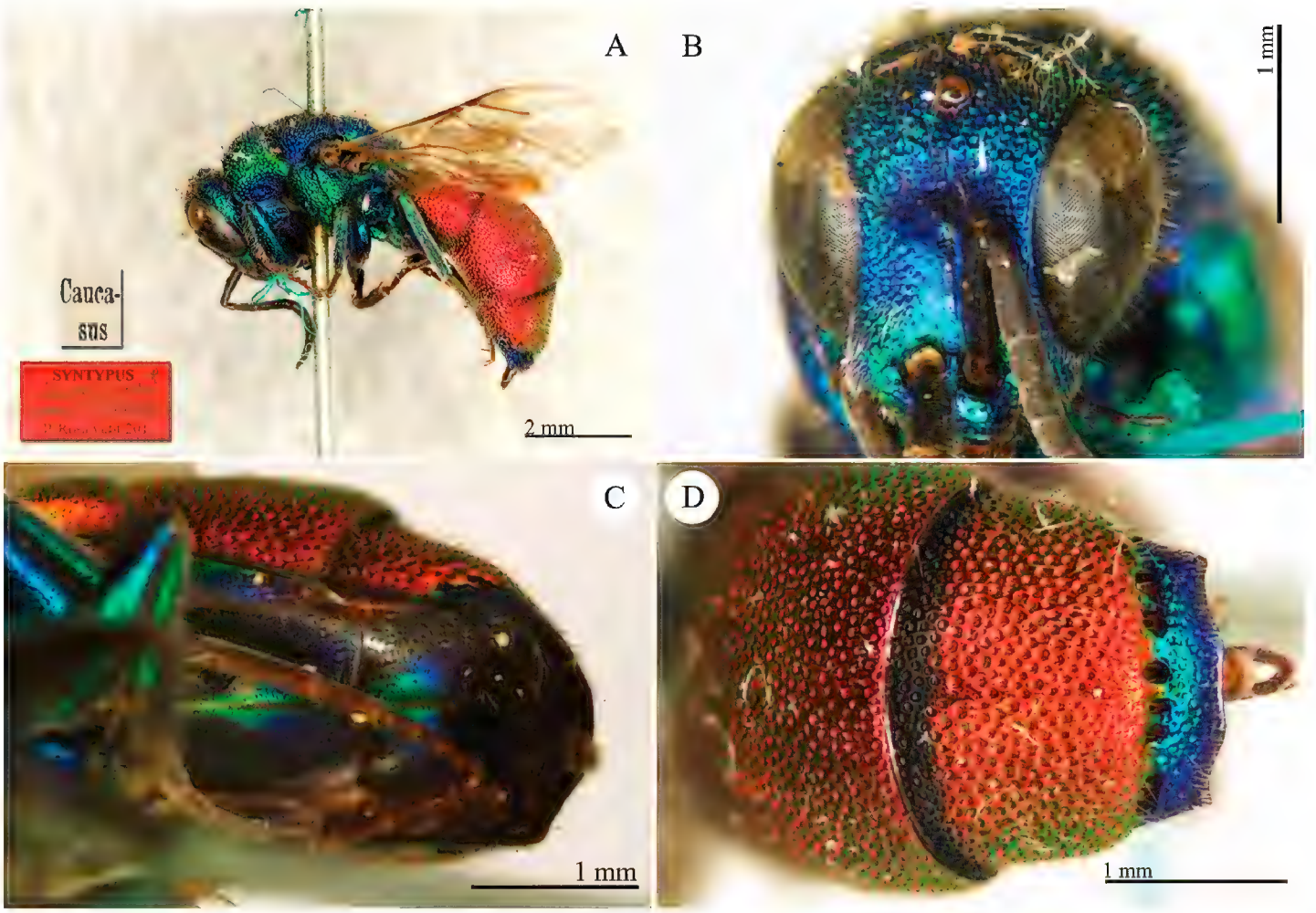



**Plate 4.** *Chrysis analis* var. *perrisi* Radoszkovsky, 1880, syntype. **A** Habitus, lateral view **B** head, frontal view **C** metasoma, ventral view **D** third metasomal tergite, dorsal view.

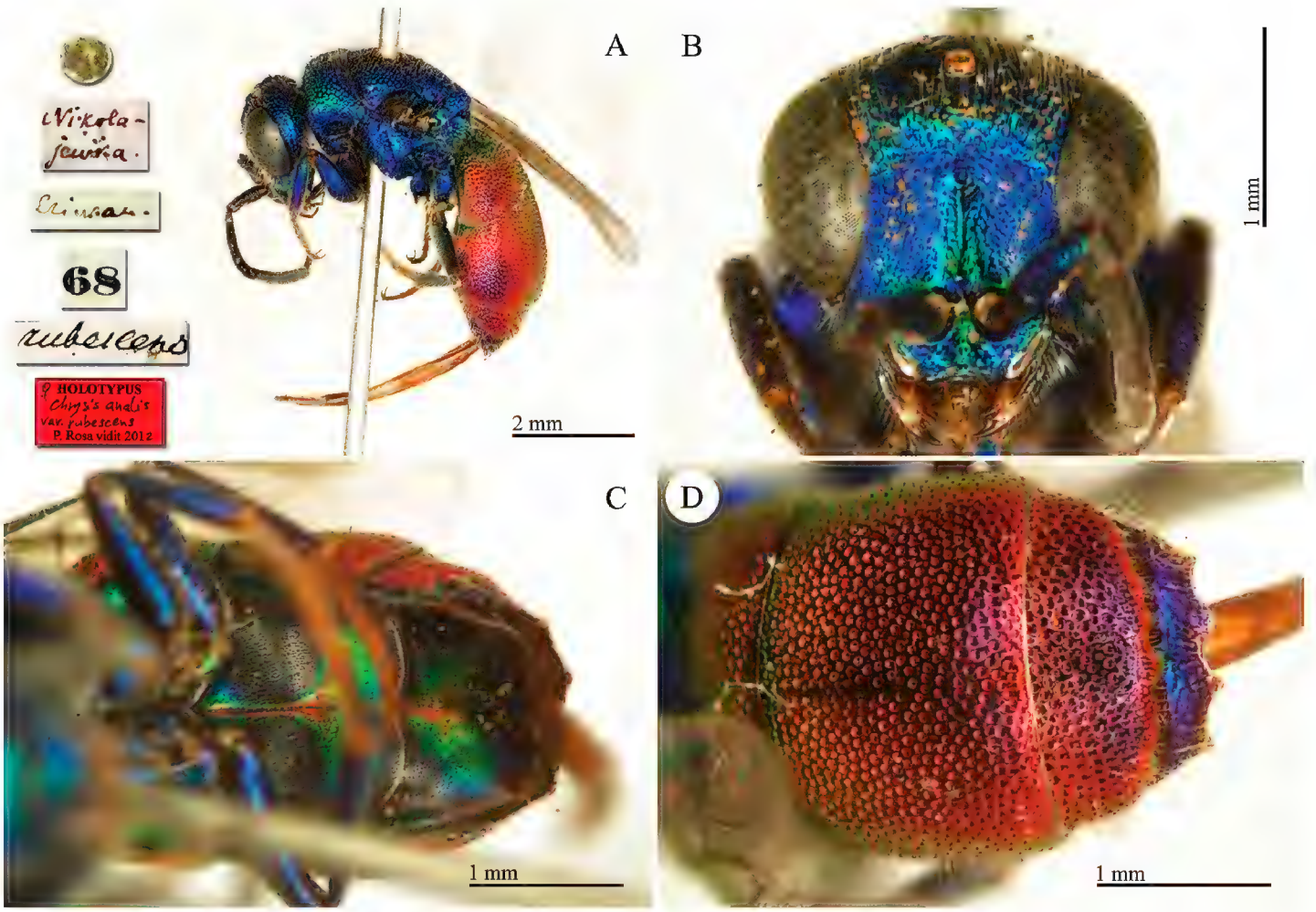



**Plate 5.** *Chrysis analis* var. *rubescens* Radoszkovsky, 1880, holotype. **A** Habitus, lateral view **B** head, frontal view **C** metasoma, ventral view **D** second and third metasomal tergites, dorsal view.

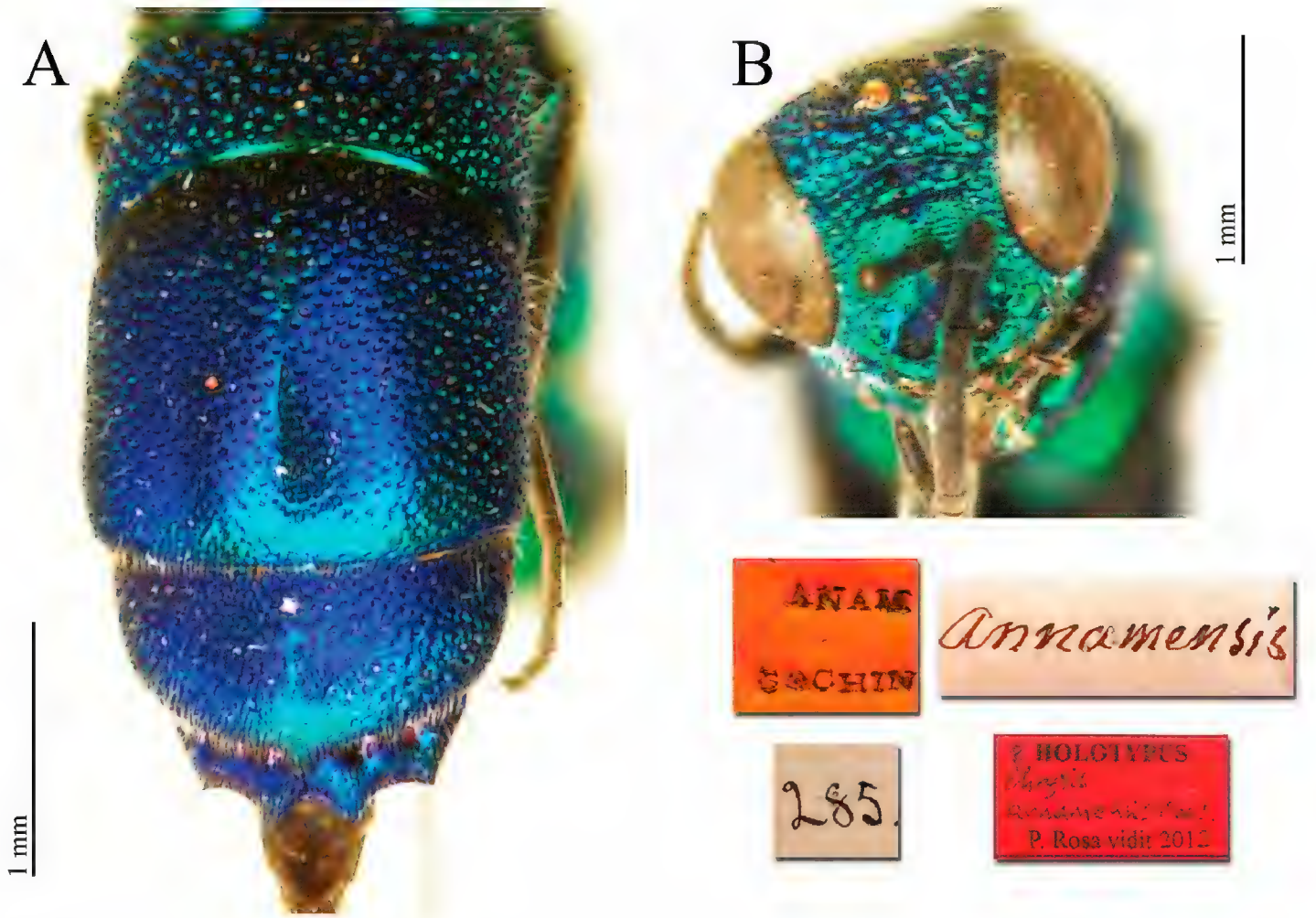



**Plate 6.** *Chrysis annamensis* Mocsáry, 1889, holotype. **A** Metasoma, dorsal view **B** head, frontal view.

***Chrysis annamensis* Mocsáry, 1889**
Plate 6

*Chrysis* (*Tetrachrysis*) *Annamensis* Mocsáry 1889: 377.

**Type locality.** "Patria: Cochinchina (Annam, Coll. Rad.)".

**Holotype** ♀ [box 61]: Anam Cochin [printed, sic!] [orange label] // 285 [handwritten by Mocsáry] // *annamensis* [handwritten by Radoszkowski].

**Remarks.** *Chrysis annamensis* belongs to the *C. ignita* group.

**Current status.** *Chrysis annamensis* Mocsáry, 1889.

***Chrysis apicalis* Radoszkovsky, 1880**
Plate 7

*Chrysis apicalis* Radoszkovsky 1880 (1879): 146.

**Type locality.** "Caucase" [written in the introduction].

**Holotype** ♀ [box 61]: label with metasoma glued on it // golden rounded label // Cauca Mlokos [printed] // *apicalis* [handwritten by Radoszkowski] // 58 [printed].

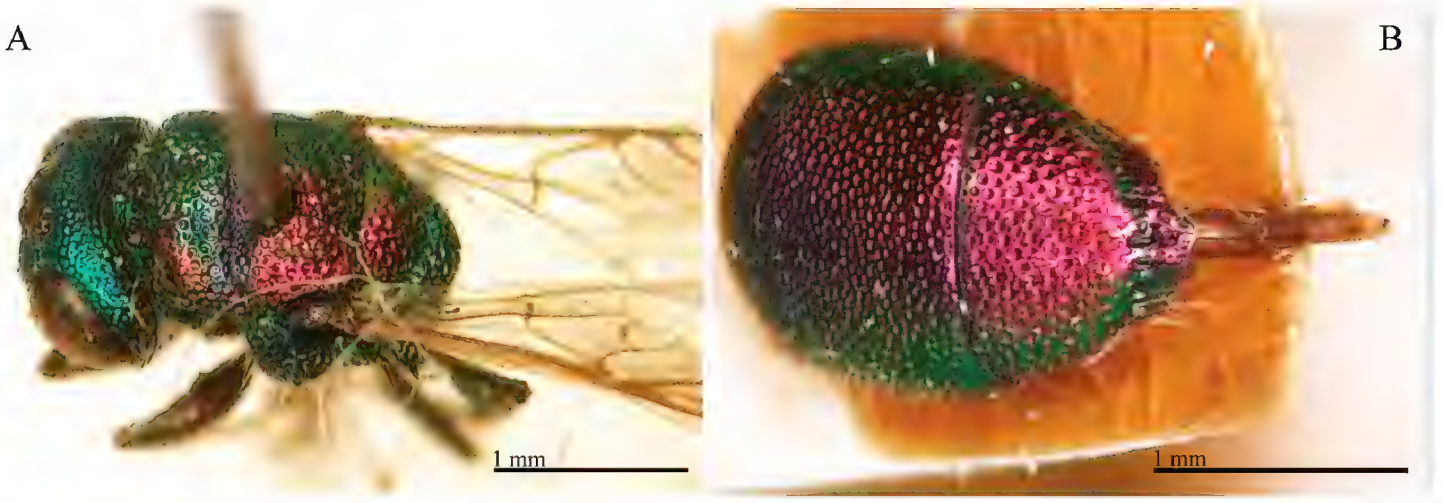



**Plate 7.** *Chrysis apicalis* Radoszkovsky, 1880, holotype. **A** Head and mesosoma, dorso-lateral view **B** second and third metasomal tergites, dorsal view.

**Remarks.** The type is damaged: the metasoma is glued on a separate label, the right antenna lacks the flagellum, and the left antenna lacks five flagellomeres. It belongs to the *C. succincta* group.

**Current status.** *Chrysis apicalis* Radoszkovsky, 1880.

## *Chrysis araratica* Radoszkowski, 1890

Plate 8

*Chrysis araratica* Radoszkowski 1890 (1889): 509.

**Type locality.** "Ararat, entre Sardar-Abadu et Sarabandy (13,000')" [given in the introduction].

**Holotype** ♂ [box 61]: golden rounded label // Ararat [printed] [yellow label] // araratica R [handwritten by Radoszkowski] // Mus. PAN Kraków [handwritten by Dylewska].

**Remarks.** Kimsey and Bohart (1991: 385) placed it in the *C. comparata-scutellaris* group.

**Current status.** *Chrysis araratica* Radoszkowski, 1890.

## *Chrysis ariadne* Mocsáry, 1889

*Chrysis* (*Tetrachrysis*) *Ariadne* Mocsáry 1889: 416.

**Type locality.** "Patria: Graecia (Morea, Mus. Caes. Vindob.! et Mus. Hung.); Caucasus (Daghestan, Coll. Rad.); territorium Transcaspicum (Coll. Rad.!)".

**Paralectotype** 1♂ [box 61]: Trans-Caspia [printed] [yellow label] // *Chrysis* n. sp. *Ariadne* Mocs. [handwritten by Mocsáry].

**Paralectotype** 1♂ [box 61]: golden rounded label // Daghestan [printed pink label darkened with a pencil] // *ariadne* Mocs. [handwritten by Radoszkowski] // 196 [printed].

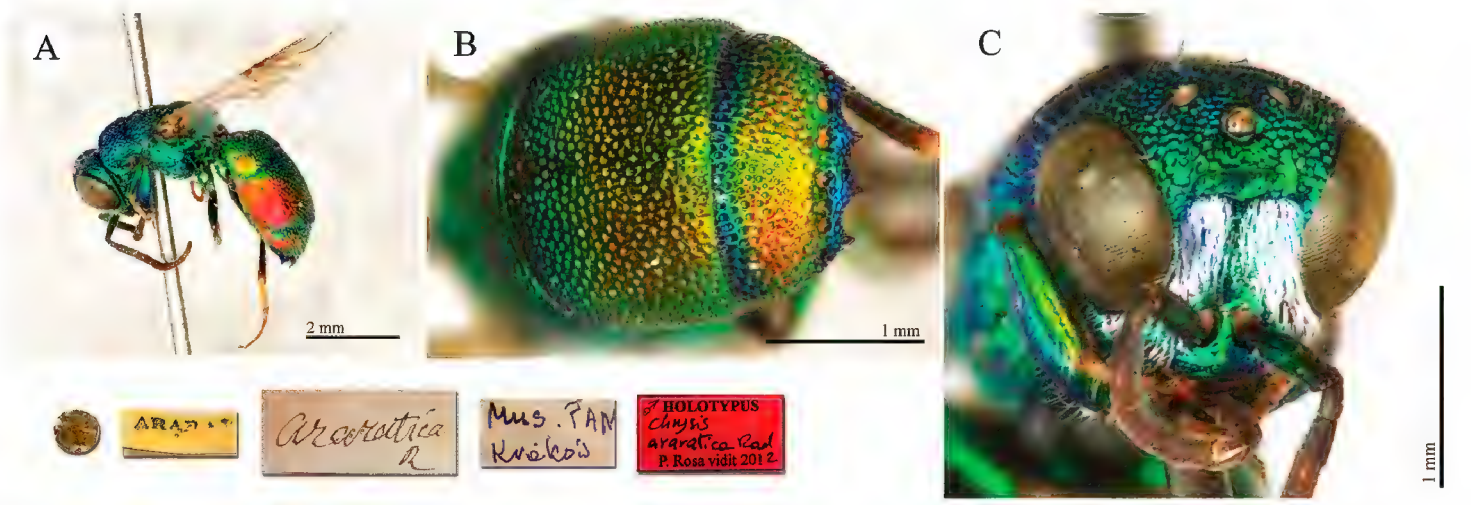



**Plate 8.** *Chrysis araratica* Radoszkowski, 1890, holotype. **A** Habitus, lateral view **B** second and third metasomal tergites, dorsal view **C** head, frontal view.

**Paralectotype** 1♂ [box 61]: Daghesta [printed pink label darkened with a pencil].

**Remarks.** Lectotype designated by Moczár (1965: 172), preserved in HNHM. It belongs to the *C. comparata-scutellaris* group.

**Current status.** *Chrysis soror* Dahlbom, 1854 (synonymised by Linsenmaier 1959: 125).

## *Chrysis ashabadensis* Radoszkowski, 1891

Plate 9

*Chrysis ashabadensis* Radoszkowski 1891a: 183.

**Type locality.** "Ashabad".

**Holotype** ♂ [box 60]: label with tergal segment // Trans-Caspia [printed] [yellow label] // *ashabadensi* [handwritten by Radoszkowski sic!].

**Remarks.** The type is partly damaged: both hind-legs are missing and both antennae are broken (the left antenna lacks five flagellomeres, the right antenna lacks six); the genital capsule glued on the label is also missing; a few metasomal sternites and tergites are still glued on the label.

It belongs to the *C. succincta* group and not to the *C. elegans* group, as supposed by Linsenmaier (1968) and Kimsey and Bohart (1991).

**Current status.** *Chrysis ashabadensis* Radoszkowski, 1891.

## *Chrysis asiatica* Radoszkowski, 1889

*Chrysis* (*Tetrachrysis*) *asiatica* Radoszkowski 1889: 26.

**Type locality.** "Tachkent; vallée de Zarafchan".

**Holotype** (?) ♂ [box 61]: golden rounded label // label with genitalia // Степь м. С. д. и Т. [printed] // 19 [printed] [pink label] // *asiaticus* [handwritten by Radoszkowski] // 251 [printed].

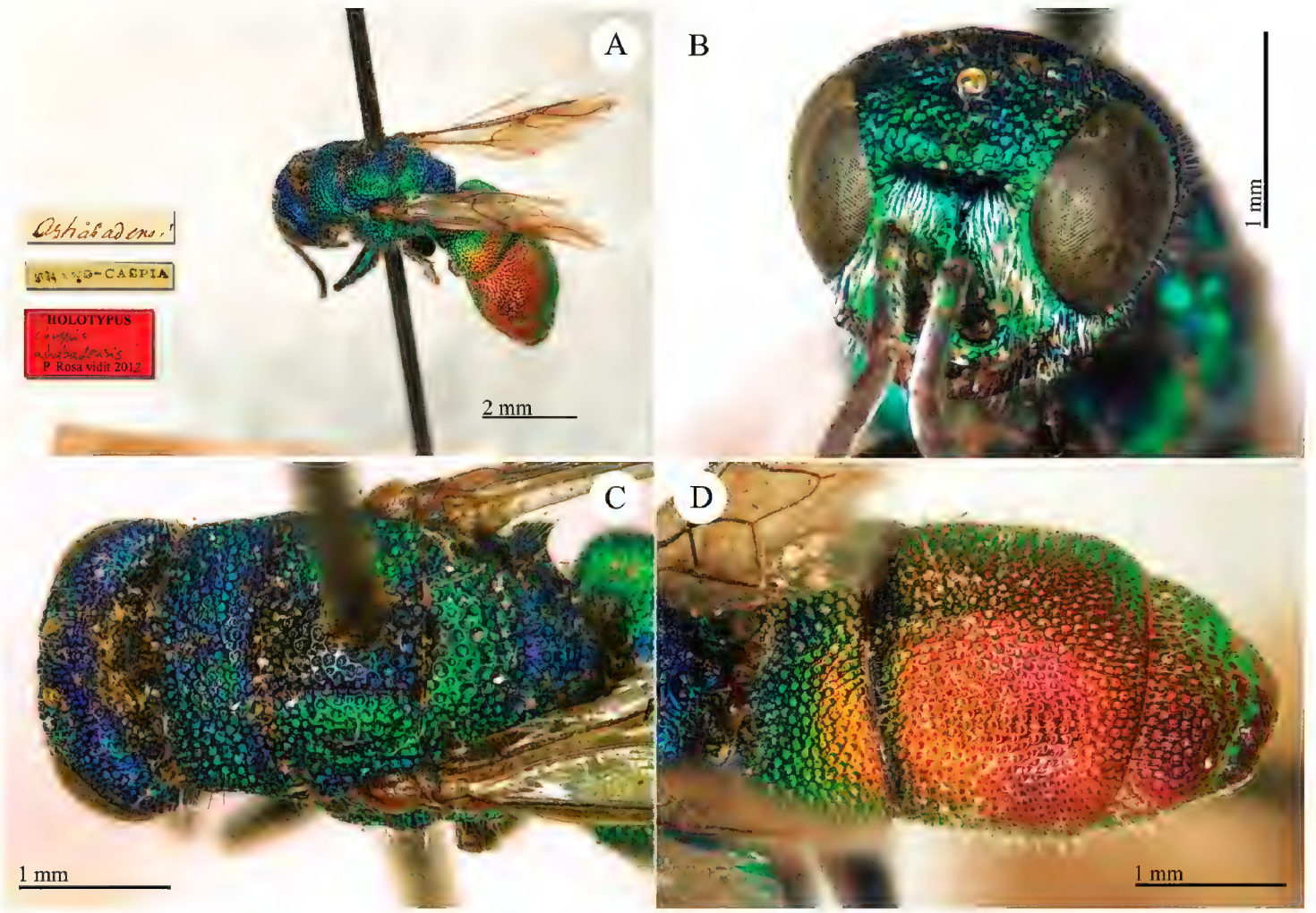



**Plate 9.** *Chrysis ashabadensis* Radoszkowski, 1891, holotype. **A** Habitus, dorso-lateral view **B** head, frontal view **C** mesosoma, dorsal view **D** metasoma, dorso-lateral view.

**Remarks.** The type is damaged: it is missing its mid- and left hind-legs; its tibia and tarsi.

Radoszkowski (1877: 21) firstly identified this species as *C. analis* Spinola. Radoszkowski (1889) illustrated the genitalia of this specimen. It belongs to the *C. comparata* group.

**Current status.** *Chrysis asiatica* Radoszkowski, 1889.

### *Chrysis auropunctata* Mocsáry, 1889

*Chrysis* (*Tetrachrysis*) *auropunctata* Mocsáry 1889: 474.

**Type locality.** "Patria: Annam in Cochinchina (Coll. Rad.)".

**Holotype** ♀ [box 61]: golden rounded label // Anam Cochin [printed] [orange label] // *auropunctata* Moc [handwritten by Radoszkowski] // 139 [printed].

**Remarks.** The specimen represents the light green variation of *Chrysis angolensis* Radoszkovsky, 1881. Here we propose the new synonym: *Chrysis* (*Tetrachrysis*) *auropunctata* Mocsáry, 1889 = *Chrysis angolensis* Radoszkovsky, 1881. It belongs to the *C. angolensis* group.

**Current status.** *Chrysis angolensis* Radoszkovsky, 1881.

### *Chrysis barrei* Radoszkowski, 1891

*Chrysis Barrei* Radoszkowski 1891a: 194.

**Type locality.** "Saraks".

**Paralectotype** 1♂ [box 61]: golden rounded label // Tr-Cap Saraks [printed] [yellow label] // *Barrei* [handwritten by Radoszkowski].

**Remarks.** Kimsey and Bohart (1991: 479) designated the lectotype by inference of "holotype" (ICZN art. 74.6). It belongs to the *C. comparata* group.

**Current status.** *Chrysis xanthocera* Klug, 1845 (synonymised by du Buysson (in André) 1895: 523).

### *Chrysis branicki* Radoszkovsky, 1877

*Chrysis Branicki* Radoszkovsky 1877 (1876): 107.

**Type locality.** "apportée d'Egypte pendant le voyage du comte Branicki".

**Syntype** 1♀ [box 60]: Eldar Caucas [printed].

**Syntype** 1♀ [box 60]: Caucas [printed].

**Remarks.** The type locality is probably misinterpreted: Radoszkowski gave "Egypt" as the type locality, but the true type locality should be Caucasus. In fact, the original description is provided in a paper discussing the Russian Hymenoptera (*Matériaux pour servir à une faune hyménoptèròlogique de la Russie*) in which all of the other species described were collected in Caucasus. In the same journal, Radoszkowsky listed the material collected in Egypt by Count Branicki, the Polish nobleman who financed many scientific trips to Egypt and who sponsored Professor Waga, Radoszkowski's teacher (*Comte-rendu des Hyménoptères recueillis en Egypte et Abyssinie en 1873*). Radoszkowski dedicated this chrysidid to Branicki, and most likely confused the localities. One syntype is also deposited in MNHU. It belongs to the *C. bihamata* group.

**Current status.** *Chrysis branickii* Radoszkovsky, 1877 (emended by Radoszkovsky 1877: 146).

### *Chrysis caucasica* Radoszkovsky, 1877

*Chrysis Caucasica* Radoszkovsky 1877 (1876): 108.

**Type locality.** "Envoyé du Caucase par Mr. Mlokosiewitz".

**Plate 10.** *Chrysis chalcophana* Mocsáry, 1889, holotype. **A** Mesosoma, dorsal view **B** metasoma, dorsal view.

**Syntype** 1♀ [box 62]: golden rounded label // Caucasus [printed] // 30 [printed] // *caucasica* [handwritten by Radoszkowski] // *sexdentata* Chr *caucasica* R. [handwritten by Radoszkowski].

**Syntype** 1♀ [box 62]: Caucasus [printed].

**Remarks.** Mocsáry (1889: 537) synonymised it with *Chrysis sexdentata* Christ, 1791. Kimsey and Bohart (1991: 475) placed *C. caucasica* and *C. sexdentata* in synonymy with *C. variegata* Olivier, 1791. All the authors before Kimsey and Bohart (1991) (e.g. Mocsáry 1889: 597; Dalla Torre 1892: 87; Bischoff 1913: 29; Trautmann 1927: 86) and after (e.g. Linsenmaier 1997: 286; Rosa 2005: 90, Strumia 1995), with the only exception of Mingo (1994), considered *C. variegata* as a synonym of *Euchroeus purpuratus* (Fabricius, 1787). For detailed considerations see Linsenmaier (1997) and Rosa (2005). It belongs to the *C. smaragdula* group *sensu* Kimsey and Bohart (1991).

**Current status.** *Chrysis sexdentata* Christ, 1791 (synonymised by Mocsáry 1889).

## ***Chrysis chalcophana* Mocsáry, 1889**

Plate 10

*Chrysis* (*Olochrysis*) *chalcophana* Mocsáry 1889: 213.

**Type locality.** "Caucaus (Coll. Rad.)".

**Holotype** ♂ [box 60]: golden rounded label // ♂ sp. // Cauca Mlokos [printed] // 116 [printed] // *chalcophana* Mocs. [handwritten by Radoszkowski].

**Remarks.** The type is badly damaged missing the head, pronotum, fore-legs, and some tarsi of the hind-legs. It is closely related to *C. tenella* Mocsáry, 1889; the main difference is the shape of the pits in the pit-row of the third tergite. Mocsáry (1889) described the two species mainly based on the colouration. Since the body colouration and the pits in the pit-row may be variable, *C. chalcophana* could be synonym of *C. tenella*. It belongs to the *C. millenaris* group.

**Current status.** *Chrysis chalcophana* Mocsáry, 1889.

### *Chrysis chevrieri* var. *orientalis* Mocsáry, 1889

*Chrysis* (*Tetrachrysis*) *Chevrieri* var. *orientalis* Mocsáry 1889: 480, *nec* Guérin-Méneville, 1842.

**Type locality.** "Patria: Græcia (Parnassus, Coll. Schmiedeknecthi! Ephesus, Mus. Turicense!) et Caucasus (Coll. Rad.! Mus. Hung. et Vindob.! et Coll. Fairmaieri!)".

**Paralectotype** 1♂ [box 61]: Caucas Mlok [printed] // 263 [handwritten by Mocsáry] // var. *orientalis* Mocs [handwritten by Radoszkowski].

**Remarks.** Twelve other specimens bearing the same locality labels, but without handwritten identification labels by Radoszkowski, could be considered as paralectotypes. The lectotype was designated by Moczár (1965: 174) at HNHM. Linsenmaier (1959: 149) replaced the name *orientalis* Mocsáry 1889 with *orientica* (*comparata* ssp. *orientica*) and considered it as the greenish oriental subspecies of *C. comparata* Lepeletier, 1806. It belongs to the *C. comparata* group.

**Current status.** *Chrysis comparata orientica* Lepeletier, 1959.

### *Chrysis chlorochrysa* Mocsáry, 1889

Plate 11

*Chrysis* (*Tetrachrysis*) *chlorochrysa* Mocsáry (Inédite) (in Radoszkowski) 1889 [*nec* 1883]: 23.

**Type locality.** "Askhabad".

**Syntype** 1♂ [box 61]: golden rounded label // Ashabad [printed] [yellow label] // *chlorochrysa* Mocs. [handwritten by Radoszkowski] // Rad. [handwritten by Mocsáry] // 39 [handwritten] // 127 [printed] // label with genitalia.

**Remarks.** Du Buysson (in André) (1895: 500) considered *Chrysis subcoerula* as the female of *chlorochrysa*, but without synonymizing it (*Obs. - Le female décrit par M. le général O. Radoszkowsky appartient à la* C. chlorochrysa *Mocs., d'après le spécimen que l'auteur a eu l'amabilité de m'envoyer.*). One female from Saraks, probably not a type, is housed in MNHN. It belongs to the *C. viridissima* group *sensu* Linsenmaier.

**Current status.** *Chrysis chlorochrysa* Mocsáry, 1889.

### *Chrysis chrysochlora* Mocsáry, 1889

Plate 12

*Chrysis* (*Tetrachrysis*) *chrysochlora* Mocsáry 1889: 515.

**Type locality.** "Patria: Turkestania (Taschkend, Coll. Rad.! et Mus. Hung.)".

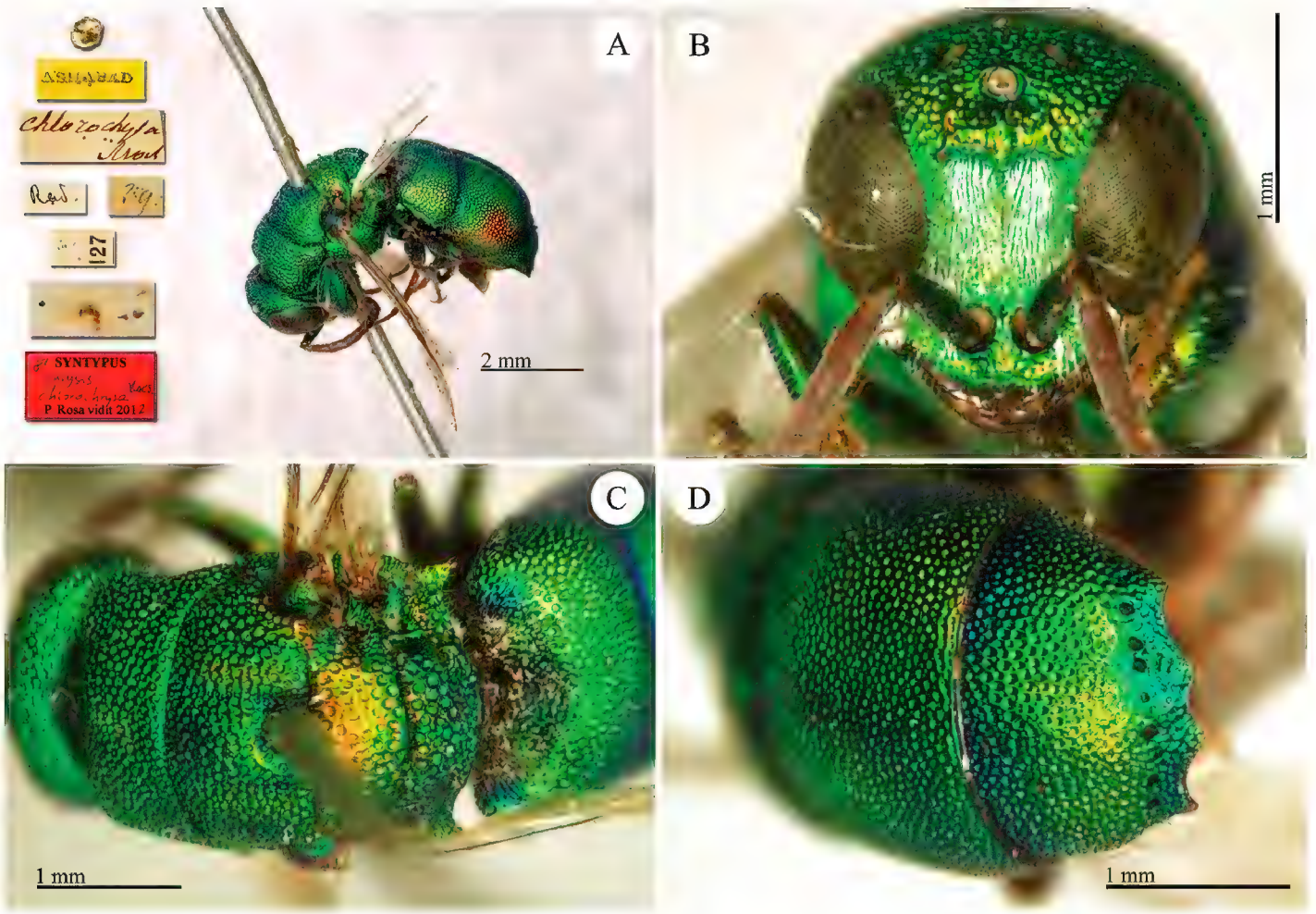



**Plate 11.** *Chrysis chlorochrysa* Mocsáry, 1889, syntype. **A** Habitus, dorso-lateral view **B** head, frontal view **C** mesosoma, dorsal view **D** third metasomal tergite, dorsal view.

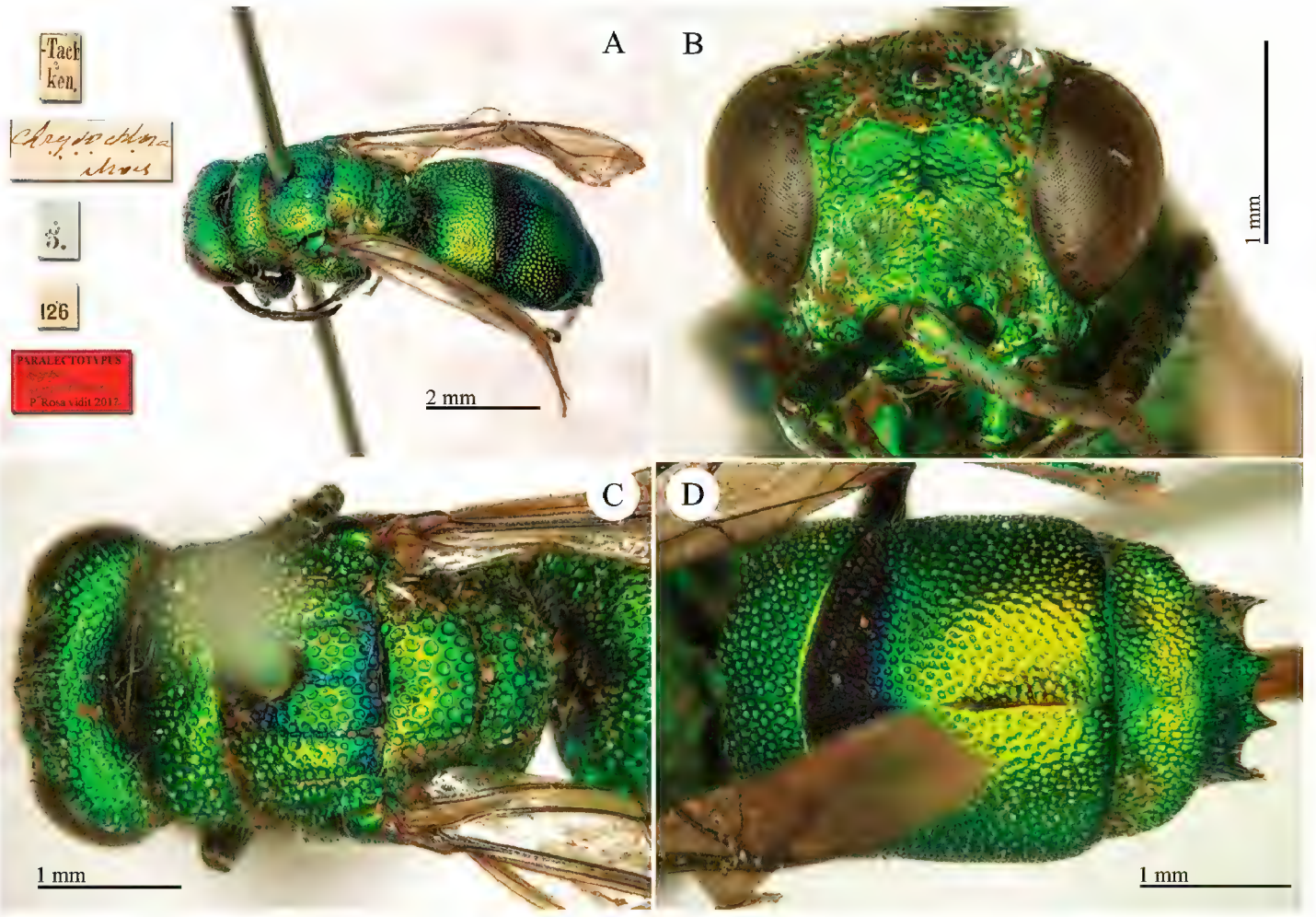



**Plate 12.** *Chrysis chrysochlora* Mocsáry, 1889, paralectotype. **A** Habitus, dorso-lateral view **B** head, frontal view **C** mesosoma, dorsal view **D** metasoma, dorsal view.

**Paralectotypes** 6♀♀ [box 61]: all specimens bear label Tachkend [printed]; two specimens bear a golden rounded label, one of them bears also other two labels: "*chrysochlora* Mocs" [handwritten by Radoszkowski], "5." and "126" [printed]; other two specimens bear unreadable label [handwritten]; one specimen bears a label Kapaxymь [handwritten].

**Remarks.** Bohart (in Kimsey and Bohart 1991: 396) designated a female collected at Tashkent in HNHM as the lectotype. After type examination, we found that *Chrysis chrysochlora* is the female of *C. keriensis* Radoszkowski, 1887.

The name *C. chrysochlora* is commonly found in collections because Linsenmaier (1959: 161) included *C. chrysochlora* and the subspecies *korbiana* Mocsáry, 1912 in his revision of the European species. In recent years only Tarbinsky (2000: 193) used *C. chrysochlora* as a valid name in the key of the *C. ignita* group of Tian-Shan. Nevertheless, there is no reason to ask for the reversal of precedence (Art. 23.9 of the Code) and we propose the new synonym *Chrysis chrysochlora* Mocsáry, 1889 = *Chrysis keriensis* Radoszkowski, 1887. It belongs to the *C. ignita* group.

**Current status.** *Chrysis keriensis* Radoszkowski, 1887.

### *Chrysis circe* Mocsáry, 1889

*Chrysis* (*Olochrysis*) *Circe* Mocsáry 1889: 230.

**Type locality.** "Patria: Caucasus (Coll. Rad.)".

**Syntype** 1♀ [box 60]: label with glued metasoma // Caucas Mlok [printed] // *Phryne* ab. [handwritten by Radoszkowski] // 216 [printed] // *circe* Moc. [handwritten by Radoszkowski].

**Syntype** 1♀ [box 60]: Caucas Nlokos [printed sic!] // *candens* [handwritten by du Buysson] [light blue label] // dark blue rounded label // 103 [printed] // *Chrysis Circe* Mocs. [handwritten by Mocsáry].

**Remarks.** *Chrysis circe* belongs to the *C. phryne* group.

**Current status.** *Chrysis circe* Mocsáry, 1889.

### *Chrysis consobrina* Mocsáry, 1889

*Chrysis* (*Tetrachrysis*) *consobrina* Mocsáry 1889: 458.

**Type locality.** "Patria: territorium Transcaspicum (Coll. Rad.!) et Persia (Demalen (sic) et Ashabad, Coll. Rad.! et Mus. Hung.)".

**Paralectotype** 1♀ [box 61]: golden rounded label // Pers Mlok [printed] [orange label] // Demabend [handwritten by Radoszkowski] // 120 [printed] // *consobrina* Mocs. (*prodima* Mocs. i.l. *nec* Cam.) [handwritten by Mocsáry].

**Paralectotype** 1♀ [box 61]: Trans-Caspia [printed] [yellow label] // *consobrina* Mocs. [handwritten by Mocsáry].

**Paralectotype** 1♂ [box 61]: Trans-Caspia [printed] [yellow label] // label with genitalia // *rubescens* ♂ [handwritten by Radoszkowski] // *consobrina* Mocs. [handwritten by Mocsáry].

**Remarks.** Bohart (in Bohart and French 1986: 341) designated a female collected in Transcaspia and housed at HNHM as the lectotype, and it was later placed in the *C. scutellaris* group in synonymy with *C. soror* (Kimsey and Bohart 1991: 464). Bohart's lectotype belongs to another species group: the *C. maculicornis* group *sensu* Kimsey and Bohart (1991) or *C. cerastes* group *sensu* Linsenmaier (1959, 1968), being similar to *C. annulata* du Buysson and related species. Rosa et al. (2014) revalidated the species. A revision of this group is needed to clarify the position of various taxa, included *C. consobrina*.

**Current status.** *Chrysis consobrina* Mocsáry, 1889.

## *Chrysis consobrina* var. *nova* Radoszkowski, 1891

*Chrysis consobrina* var. *nova* Radoszkowski 1891a: 185.

**Type locality.** "Ashabad".

**Syntypes** 1♂1♀ [box 61]: Trans-Caspia.

**Remarks.** As in other cases of taxa described in 1891 (e.g. *C. simulatrix* and *C. unica*), the specimens considered as syntypes bear the generic locality label "Trans-Caspia" and not "Ashabad". A female syntype is housed in HNHM and bears the following labels: Trans-Caspia / *consobrina* var. *nova* <handwritten by Radoszkowski> / *Chrysis scutellaris* v. *nova* Rad. det. Mocsáry / id nr. 115649 HNHM Hym. coll. It was described as a variation of *C. consobrina*, and it matches with the paralectotypes of *C. consobrina* in the Radoszkowski collection. It belongs to the *C. scutellaris* group and it is closely related to *C. soror* Dahlbom, 1854.

**Current status.** *Chrysis maracandensis* Radoszkowski, 1877 (synonymised by Kimsey and Bohart 1991: 436).

## *Chrysis cylindrica* Eversmann, 1857

Figure 2

*Chrysis cylindrica* Eversmann 1857: 554.

**Type locality.** "in provincia Casanensi" [given in the introduction].

**Holotype** ♀ [box 61]: golden rounded label // Saratow [handwritten] // *Chrysis* n. sp. *cylindrica* Evm. [handwritten by Eversmann] // 12 [printed] // *viridula* [handwritten by Radoszkowski].

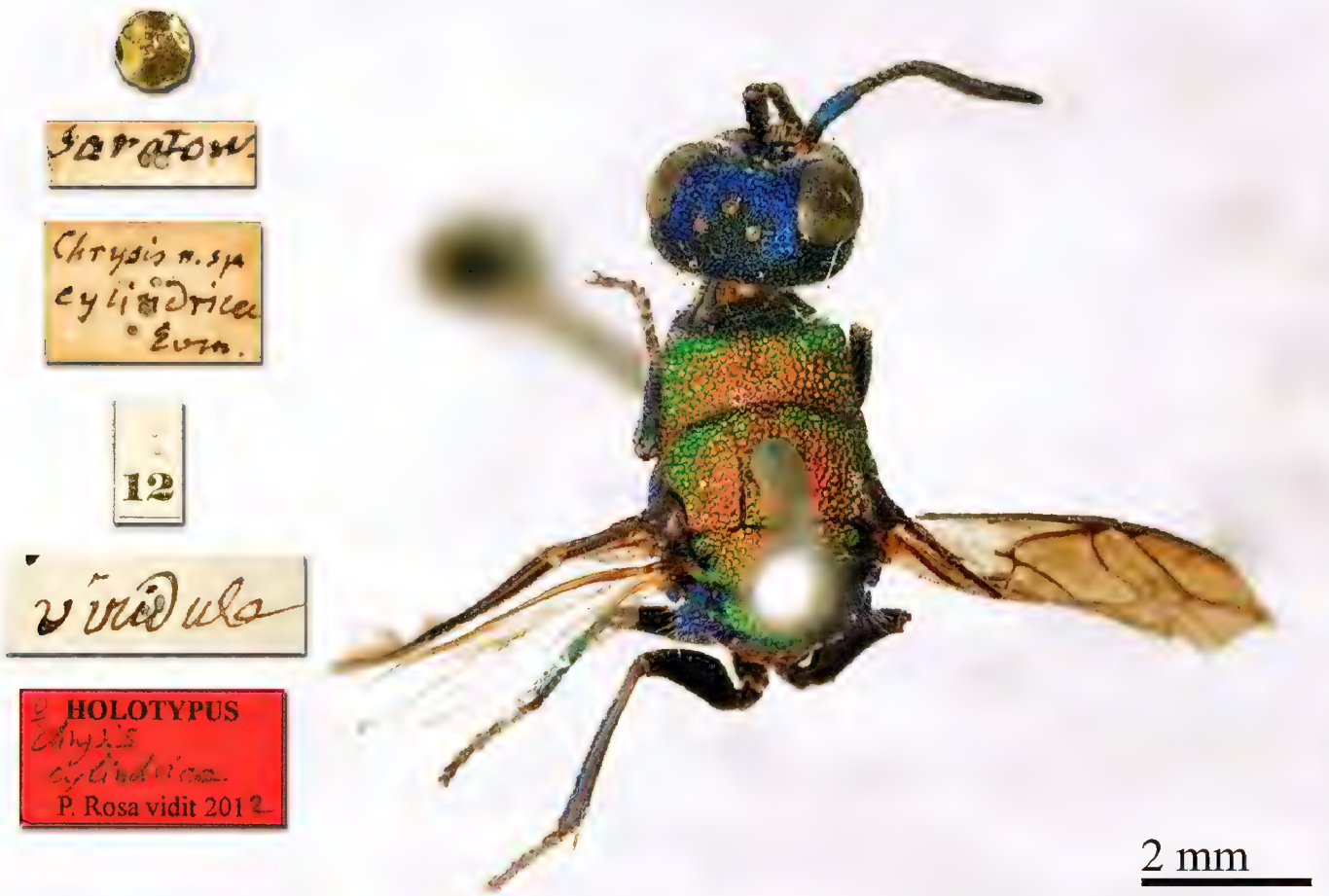



**Figure 2.** *Chrysis cylindrica* Eversmann, 1857, holotype, head and mesosoma, dorsal view.

**Remarks.** The type is seriously damaged: it lacks metasoma, tibia and tarsi of the fore- and the hind-legs, the right mid-leg, and tarsi of the left mid-leg. It matches Linsenmaier's interpretation of the species (1968: 81) and it is not a synonym of *C. viridula* Linnaeus, 1761 as stated by Mocsáry (1887: 14). It belongs to the *C. viridula* group.

**Current status.** *Chrysis cylindrica* Eversmann, 1857.

### *Chrysis daphnis* Mocsáry, 1889

Plate 13

*Chrysis* (*Gonochrysis*) *Daphnis* Mocsáry (Inédite) (in Radoszkowski) 1889: 17.

**Type locality.** "Sicile".

**Lectotype** ♂ (here designated) [box 60]: golden rounded label // label with genital capsula // Favorita [Palermo] 5-82 [handwritten].

**Paralectotype** 1♂ [box 60]: golden rounded label // I. Sicilia. [printed] // 154 [printed] // *Daphnis* Mocs [handwritten by Radoszkowski].

Kimsey and Bohart (1991: 401) considered *C. daphnis* as a synonym of *C. cylindrica* Eversmann, 1857, while Linsenmaier (1959, 1968, 1997) interpreted *C. daphnis* as a valid species, providing keys and descriptions. Linsenmaier's interpretation was correct and *C. daphnis* is a valid species strictly related to *C. consanguinea* Mocsáry.

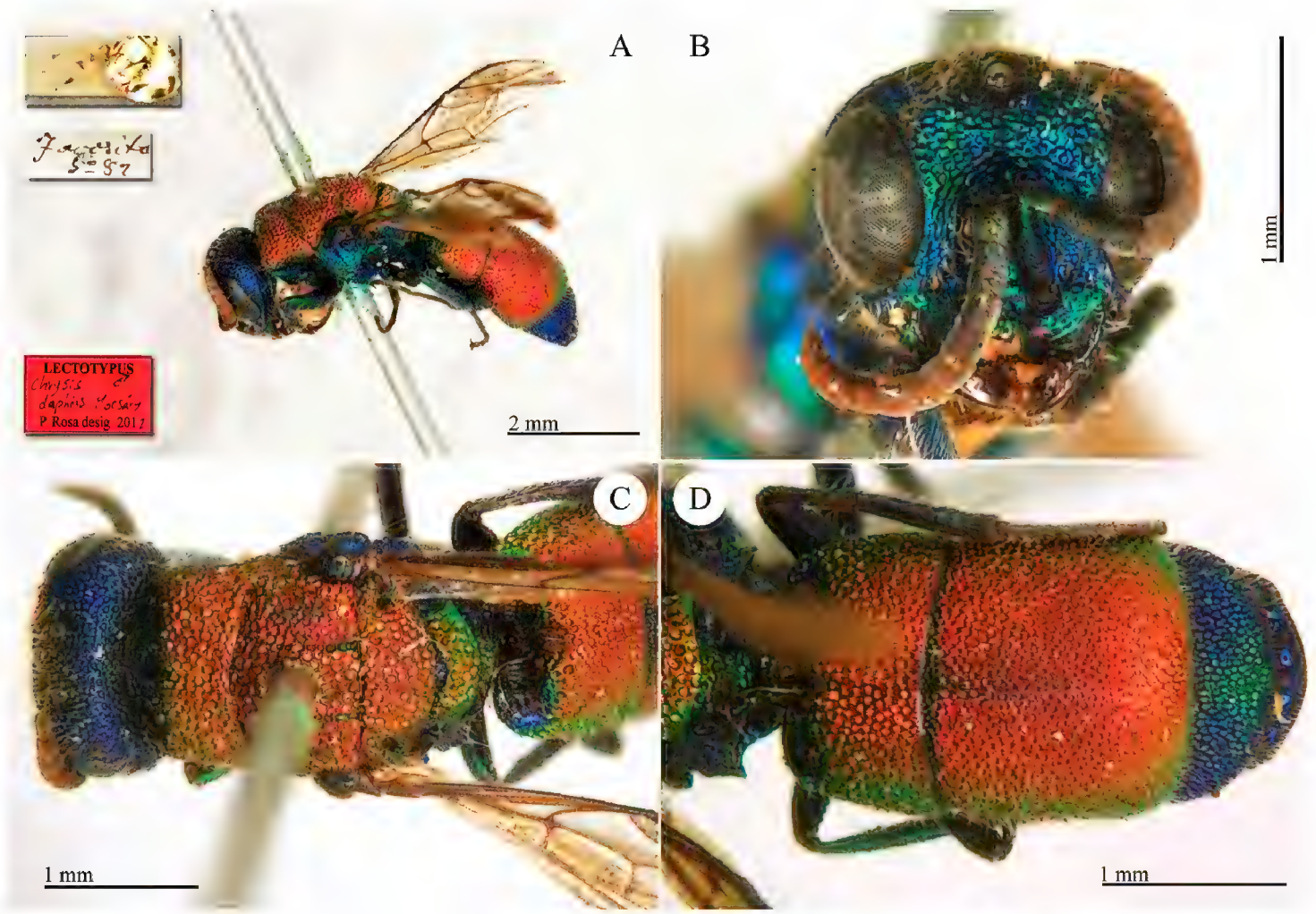



**Plate 13.** *Chrysis daphnis* Mocsáry, 1889, lectotype. **A** Habitus, dorso-lateral view **B** head, frontal view **C** mesosoma, dorsal view **D** metasoma, dorsal view.

Mocsáry (1889) described *C. consanguinea* based on two females (not male and female) from Sicily and Algeria. The two syntypes, examined and housed in MHNG, belong to two different species: *C. daphnis* and *C. consanguinea*. Therefore two lectotype designations are needed to place order in this group. We here designate the lectotype based on the specimen selected by Radoszkowski in his revision of the genital capsulae (1889). The paralectotype is damaged: the head lacks the antennae (except the left scapus) and it is glued on the mesosoma; it lacks the right metatibia and tarsi. The lectotype designation of *C. consanguinea* will be given in a subsequent paper. It belongs to the *C. viridula* group.

**Current status.** *Chrysis daphnis* Mocsáry, 1889.

### ***Chrysis demavendae*** **Radoczkowsky, 1881**

Plate 14

*Chrysis Demavendae* Radoczkowsky 1881: v.

**Type locality.** "Persia, mons Demavend".

**Holotype** ♂ [box 62]: golden rounded label // Pers Mlok [printed] [orange label] // label with genitalia // Demabend [handwritten] // 67 [handwritten].

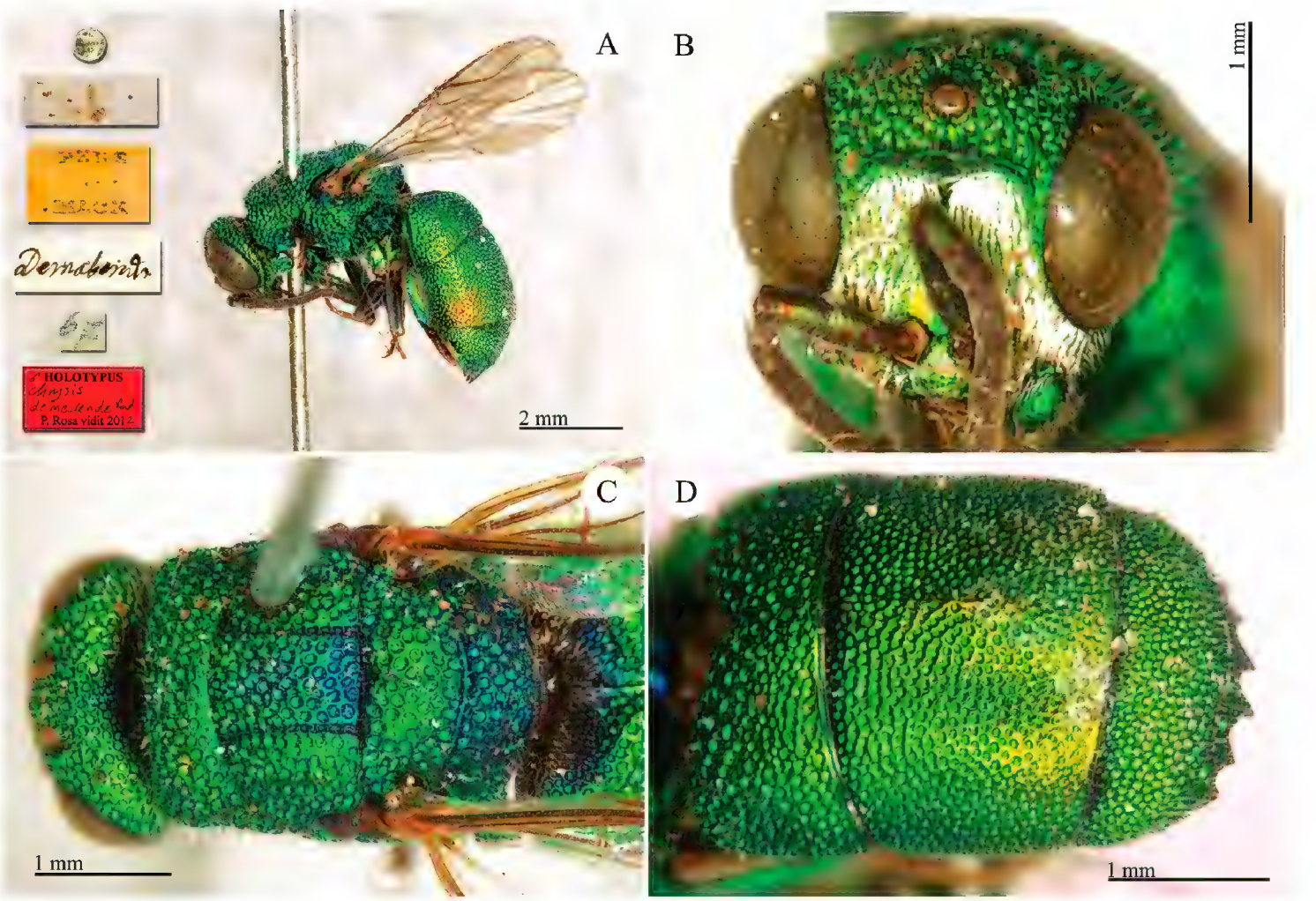



**Plate 14.** *Chrysis demavendae* Radoczkowsky, 1881, holotype. **A** Habitus, lateral view **B** head, frontal view **C** mesosoma, dorsal view **D** metasoma, dorso-lateral view.

**Remarks.** Radoszkowski (1889: 33) emended the species name to *C. demabendae* from the name of Mt. Demabend. *C. demabendae* must be considered as an invalid emendation for *C. demavendae* Radoczkowsky, 1881 according to the Art. 32.5.1 of the Code. The species is closely related to *C. sexdentata* Christ, 1791. It belongs to the *C. smaragdula* group *sensu* Kimsey and Bohart (1991).

**Current status.** *Chrysis demavendae* Radoczkowsky, 1881.

### *Chrysis dentipes* Radoszkowski, 1877

Plate 15

*Chrysis dentipes* Radoszkowski 1877: 15.

**Type locality.** "Habitat in valle Sarafshan", "Пойманъ 8 и 10 мая 1869 г. въ Каттыкурганѣ и Заравшанской долинѣ" [collected on 8th and 10th of May 1869 in Katty-Kurgan and in the Zaravshan Valley]. The locality Katty-Kurgan [= Kattakurgan] is in Uzbekistan.

**Paralectotype** 1♀ [box 61]: golden rounded label // Верхн. Заравш. [printed] // 8. [printed] [pink label] // *dentipes* [handwritten by Radoszkowski] // 43 [printed] // *Chrysis dentipes* Rad. [handwritten by Mocsáry].

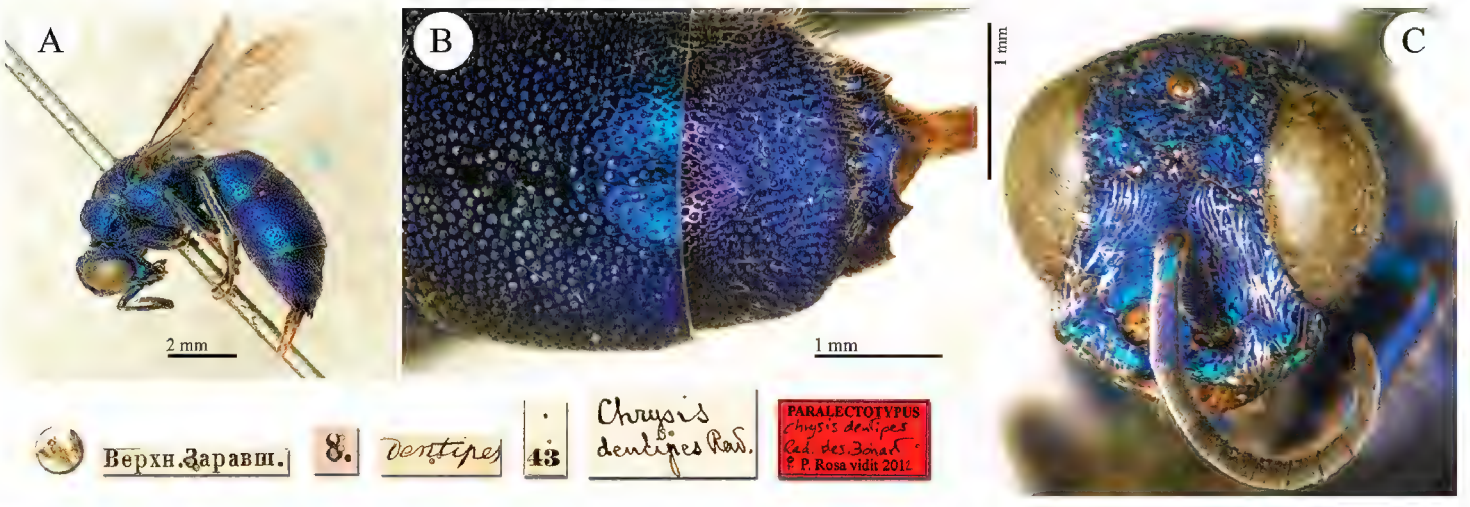



**Plate 15.** *Chrysis dentipes* Radoszkowski, 1877, paralectotype. **A** Habitus, lateral view **B** metasoma, dorsal view **C** head, frontal view.

**Remarks.** Bohart (in Kimsey and Bohart 1991: 403) designated the lectotype on a female collected at Zaravshan and housed in MMU. It belongs to the *C. taczanovskii* group.

**Current status.** *Chrysis dentipes* Radoszkowski, 1877.

## *Chrysis diadematа* Mocsáry, 1889

*Chrysis* (*Tetrachrysis*) *diadematа* Mocsáry 1889: 414.

**Type locality.** "Patria: Insulæ Philipinæ (Coll. Rad.)".

**Holotype** ♂ [box 61]: golden rounded label, Mindanao [handwritten] // Brasilia. [printed] [green label] // *diadematа* Mocs [handwritten by Radoszkowski] // 108 [printed].

**Remarks.** One of the labels bears the locality Brasilia. Mocsáry himself noted that the locality Mindanao should be related to the Philippine Islands and not to a Brazilian locality.

The particular red colour of the head is quite typical for species distributed in the islands of the Oriental Region. It belongs to the *C. angolensis* group.

**Current status.** *Chrysis diadematа* Mocsáry, 1889.

## *Chrysis dournovii* Radoszkovsky, 1866

Plate 16

*Chrysis Dournovii* Radoszkovsky 1866: 303.

**Type locality.** "Caucase".

**Holotype** ♀ [box 60]: golden rounded label // Daghest. [printed] // *Dournovy* [handwritten by du Buysson] // 51 [printed] // Durnovy [handwritten by Radoszkowski].

**Remarks.** The name *dournovii* was often incorrectly written in different papers and monographs. Some examples: *dournovi* (du Buysson (in André) 1893: 246 sub *Spino-*

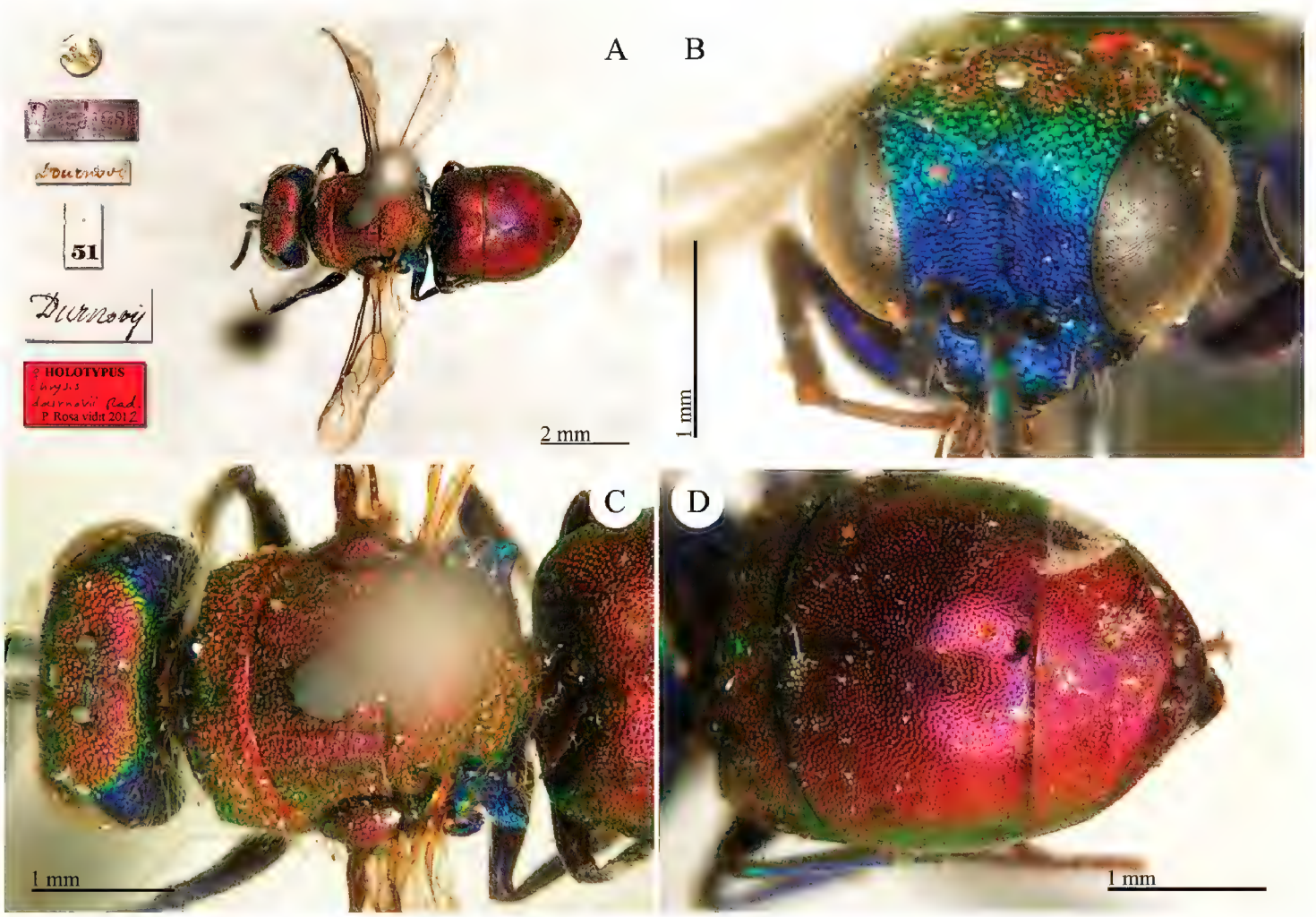



**Plate 16.** *Chrysis dournovii* Radoszkovsky, 1866, holotype. **A** Habitus, dorsal view **B** head, frontal view **C** mesosoma, dorsal view **D** metasoma, dorsal view.

*lia*; Kimsey and Bohart 1991: 551, sub *Spinolia*); *dournowii* (Dalla Torre 1892: 57 sub *Chrysis*); *durnovi* (Mocsáry 1889: 285 sub *Chrysis* (*Olochrysis*); Semenov 1892: 491 sub *Pseudochrysis*; Trautmann 1927: 88 sub *Spinolia*; Linsenmaier 1959: 69 sub *Euchroeus* (*Spinolia*)).

**Current status.** *Spinolia dournovii* (Radoszkovsky, 1866) (transferred by du Buysson (in André) 1891: 246).

### *Chrysis dubia* Radoszkowsky, 1877

Plate 17

*Chrysis dubia* Radoszkowsky 1877 (1876): 148 *nec* Rossi, 1790.

**Type locality.** "Apporté par M. Raffray d'Abyssinie".

**Holotype** ♀ [box 61]: golden rounded label // Abyss. Raffray [printed] [light blue label] // 60 [printed] // *dubia* [handwritten by Radoszkowski] // *Chrysis aethiopica* mihi (*dubia* Rad. *nec* Cress.) [handwritten by Mocsáry].

**Remarks.** It lacks eight flagellomeres on the left antenna and three flagellomeres on the right one. It belongs to the *C. ignita* group.

**Current status.** *Chrysis aethiopica* Mocsáry, 1889, replacement name for *C. dubia* Radoszkovsky, 1877.

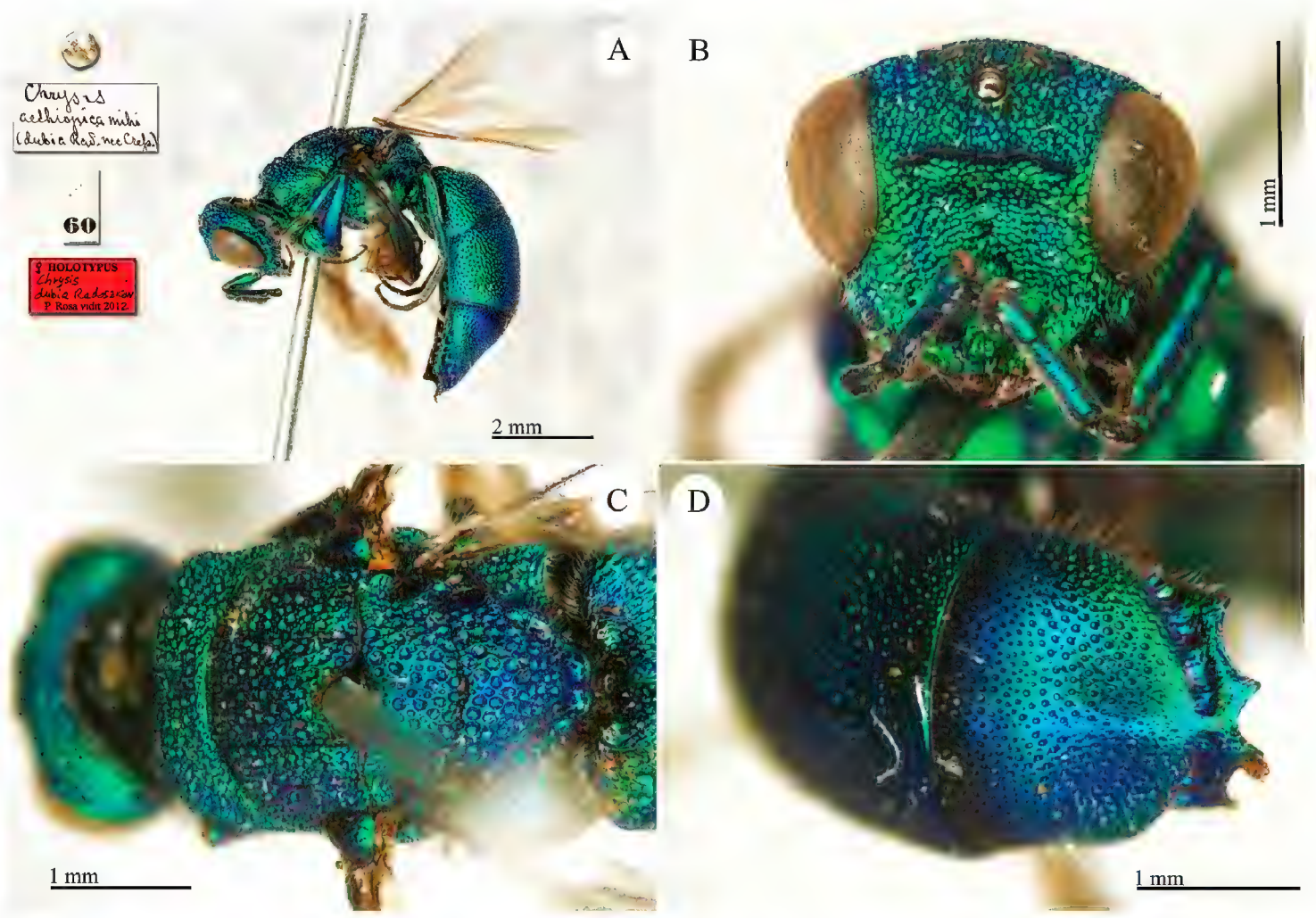



**Plate 17.** *Chrysis dubia* Radoszkowsky, 1877, holotype. **A** Habitus, lateral view **B** head, frontal view **C** mesosoma, dorsal view **D** third metasomal tergite, dorso-lateral view.

***Chrysis erigone* Mocsáry, 1889**

*Chrysis* (*Olochrysis*) *Erigone* Mocsáry 1889: 239.

**Type locality.** "Caucasus (Coll. Rad.! et Mus. Hung.)".

**Paralectotype** 1♀ [box 60]: Caucas Nlokos [printed, sic] // 270 [handwritten by Mocsáry] // *Chrysis urrainensis* Rad [?] [handwritten by Mocsáry].

**Remarks.** Bohart (in Kimsey and Bohart 1991: 489) designated the lectotype in HNHM. It belongs to the *C. radians* group.

**Current status.** *Chrysura erigone* (Mocsáry, 1889) (transferred by Kimsey and Bohart 1991).

***Chrysis erivanensis* Radoszkovsky, 1880**
Plate 18

*Chrysis Erivanensis* Radoszkovsky 1880 (1879): 146.

**Type locality.** "Caucase" [written in the introduction].

**Syntype** 1♂ [box 62]: label with genitalia // Erivan [handwritten by Radoszkowski] // 89 [handwritten].

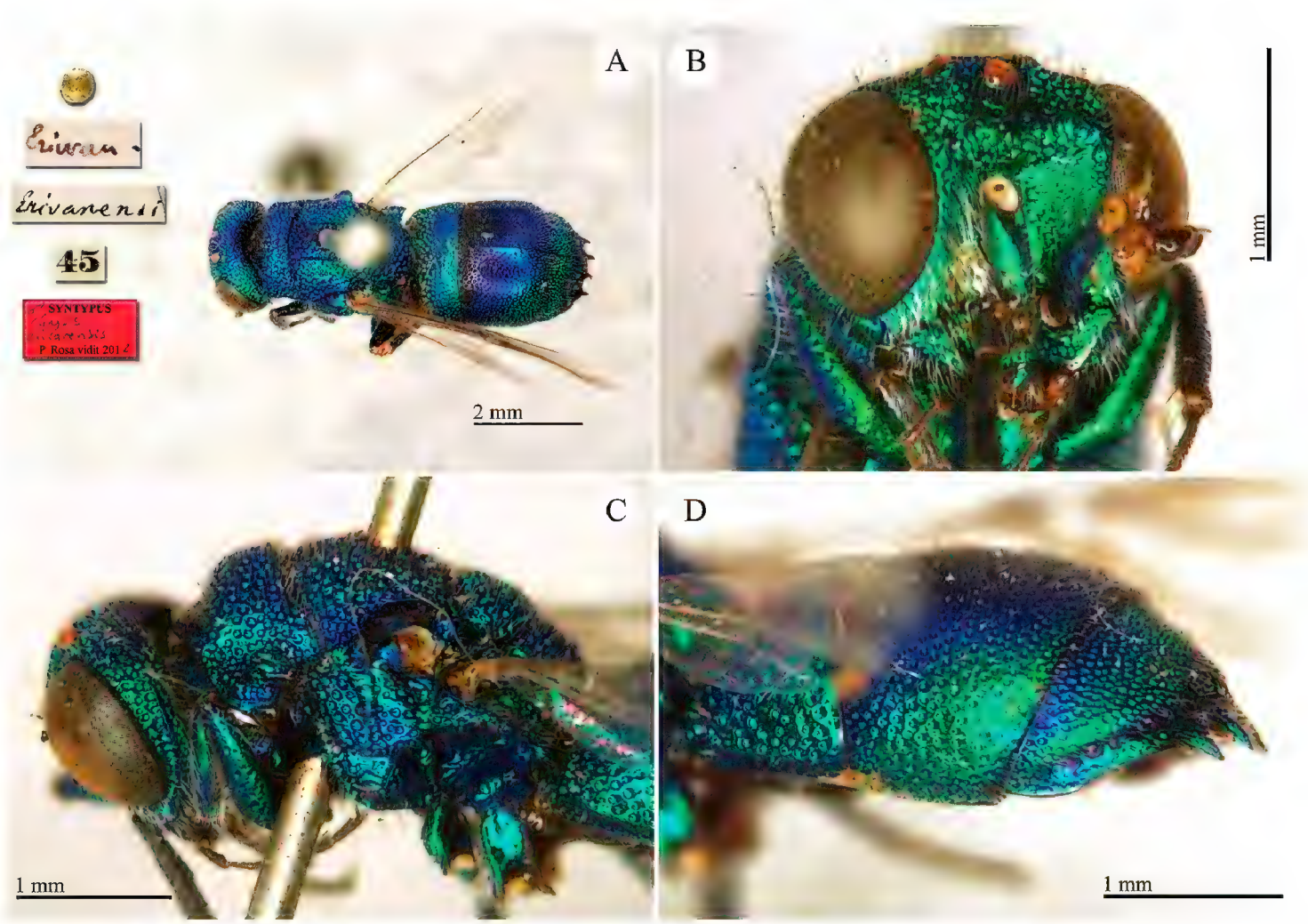



**Plate 18.** *Chrysis erivanensis* Radoszkovsky, 1880, syntype. **A** Habitus, dorsal view **B** head, frontal view **C** mesosoma, lateral view **D** metasoma, lateral view.

**Syntype** 1♂ [box 62]: golden rounded label // *erivanensi* [handwritten by Radoszkowski] // Erivan [handwritten by Radoszkowski] // 45.

**Possible Syntype** 1♂ [box 62]: *erivanensis* [handwritten by Radoszkowski] // Kasbek [handwritten by Radoszkowski].

**Remarks.** The two syntypes are badly damaged. Kimsey and Bohart (1991: 408), without type examination, placed it in the *C. smaragdula* group because Radoszkowski described *C. erivanensis* in the section: "*Ano sex-dentatae*". Radoszkowski described the anal margin of *C. erivanensis* as follows: "*troisième segment finement variolo-chagriné, sa base bleuâtre; points de la serie profonds, inégales; les quatre dents interieures egales élancées; les dents latérales éloignées, remontant vers la base du segment, très peu accentué*". The anal margin of *C. erivanensis* has four teeth and two lateral rounded swellings, which cannot be considered as true teeth. Even if the the apical margin of the third tergite is unusual, this species can be included in the *C. ignita* group for all the other characteristics.

**Current status.** *Chrysis erivanensis* Radoszkovsky, 1880.

### *Chrysis excisa* Mocsáry, 1889

*Chrysis* (*Tetrachrysis*) *excisa* Mocsáry (in Radoszkowski) 1889: 25.

**Type locality.** "France".

**Holotype** (?) ♂ [box 61]: 311 20 [handwritten] // 69 [printed] // label with genitalia.

**Remarks.** We consider the name *C. excisa* as a replacement name for *C. chevrieri* Abeille, *nec* Mocsáry. Nevertheless, many authors, from Dalla Torre (1892: 59) to Kimsey and Bohart (1991: 409), considered *C. excisa* as a new species and not a replacement name. If the second interpretation is correct, the male bearing the dissected genitalia could be considered as the holotype, because Radoszkowski drew and described only the male genitalia. Two females without locality labels, but with handwritten name by Radoszkowski, could be considered as part of the type series, but they were not mentioned in the description. They bear the following labels: first specimen: 267 2 [handwritten] // *excisa* Moc *Chevrieri* Ab. [handwritten by Radoszkowski]; second specimen: 267 7 [handwritten].

Radoszkowski (1889: figs 52, 53, 55) in his collection dissected three specimens with similar colour and habitus, belonging to the *comparata* group: one from France (identified as *C. excisa*), one from Orenbourg (*C. analis*), and one from Caucasus (*C. perrinii*). He did not consider that *Chrysis analis* was described on specimen collected in Liguria (bordering France) and not from specimens collected in central Russia (Orenbourg on the Ural River). Consequently, Radoszkowski mistakenly identified the Russian specimens as *C. analis*, and therefore the French specimen as different species based on the very different genital capsula. Mocsáry described this species based only on Radoszkowski's drawings. However, the shape of the genital capsula of *C. excisa* Mocsáry is clearly the same of *C. analis* Spinola, and the examination of the types confirm this synonym. Trautmann (1927: 171) and Linsenmaier (1951: 105) already considered *C. excisa* as synonym of *C. analis*, while Kimsey and Bohart (1991: 405) listed *C. excisa* as a valid name. We here confirm the synonym *C. excisa* Mocsáry, 1889 = *C. analis* Spinola, 1808. It belongs to the *C. comparata* group.

**Current status.** *Chrysis analis* Spinola, 1808 (synonymised by Trautmann 1927: 171).

### *Chrysis exigua* Mocsáry, 1889

*Chrysis* (*Tetrachrysis*) *exigua* Mocsáry 1889: 414.

**Type locality.** "Patria: Turkestania (Taschkend, Coll. Rad.)".

**Holotype** ♀ [box 61]: golden rounded label // Tachkend [printed] // *exigua* Moc [handwritten by Radoszkowski] // 22 [printed].

**Remarks.** *Chrysis exigua* belongs to the *C. cerastes* group.

**Current status.** *Chrysis distincta* Mocsáry, 1887 (synonymised by Linsenmaier 1968: 109).

### *Chrysis foveata* Radoszkowski, 1877

*Chrysis foveata* Radoszkowski 1877: 13 *nec* Dahlbom, 1845.

**Type locality.** "Habitat in valle Sarafschan et ad Maracanda [=Samarkand]", "Видъ египетскій; пойманъ 12 мая въ Заравшанской долинѣ и 17 іюня 1869 г. въ

Самаркандѣ" [Egyptian species; it was collected on the 12th of May in the Zaravshan Valley, and on the 17th of June 1869 at Samarkand].

**Syntype** 1♀ [box 60]: golden rounded label // Урмитанъ [printed] [Urmitan, along the Zarafshan river] // 12 [pink label] // 113 [printed] // *foveata* [handwritten by Radoszkowski] // *foveata* Rad *genalis* Moc [handwritten by Radoszkowski].

**Remarks.** Radoszkowski (1877: 13) described *Chrysis foveata* (*nec foveata* Dahlbom, 1845) based on some syntypes (at least 1 ♂ and 1 ♀ collected at Maracand [currently Samarkand] and in the Zaravshan valley). Later Mocsáry (in Radoszkowski 1889) gave the replacement name *C. genalis*. In the same paper, Radoszkowski (1889: 18; figs 35a, 35b) drew some precise line-drawings of the genital capsule of the male housed in his collection. We do not consider this male as the male syntype, because collected at Tashkent on the 1st of May, day and locality not included in the original description; it bears the labels: golden rounded label // Tachkend [printed] // label with genital capsule // Ташк 1 Мая [handwritten]. Figures of the type and discussions are published in Rosa and Hosseinali (2013). The specimen housed in MMU and considered as holotype by Kimsey and Bohart (1991: 490 sub *C. genalis*) cannot be considered as lectotype by inference according to ICZN (art. 74.5); it bears the labels: Искандеръ [Iskander] / 17 [printed on blue-green label]. It belongs to the *C. radians* group (Rosa and Hosseinali 2013).

**Current status.** *Chrysura genalis* (Mocsáry, 1887), replacement name for *C. foveata* Radoszkowski, 1877 (transferred by Kimsey and Bohart 1991).

### *Chrysis fulvicornis* Mocsáry, 1889

Plate 19

*Chrysis* (*Tetrachrysis*) *fulvicornis* Mocsáry 1889: 373.

**Type locality.** "Patria: Turkestania (Taschkend, Coll. Rad.)".

**Holotype** ♂ [box 61]: Сыръ-Дарья [printed] // golden rounded label // *fulvicornis* Moc [handwritten by Radoszkowski] // 135 [printed] // *Chrysis* n.sp. *fulvicornis* Mocs. [handwritten by Mocsáry].

**Remarks.** The specimen matches the original description. Probably the discrepancy between the locality given in the text [Taschkend] and the one on the label [Syr Daria] is a case of *lapsus calami*. It belongs to the *C. maculicornis* group.

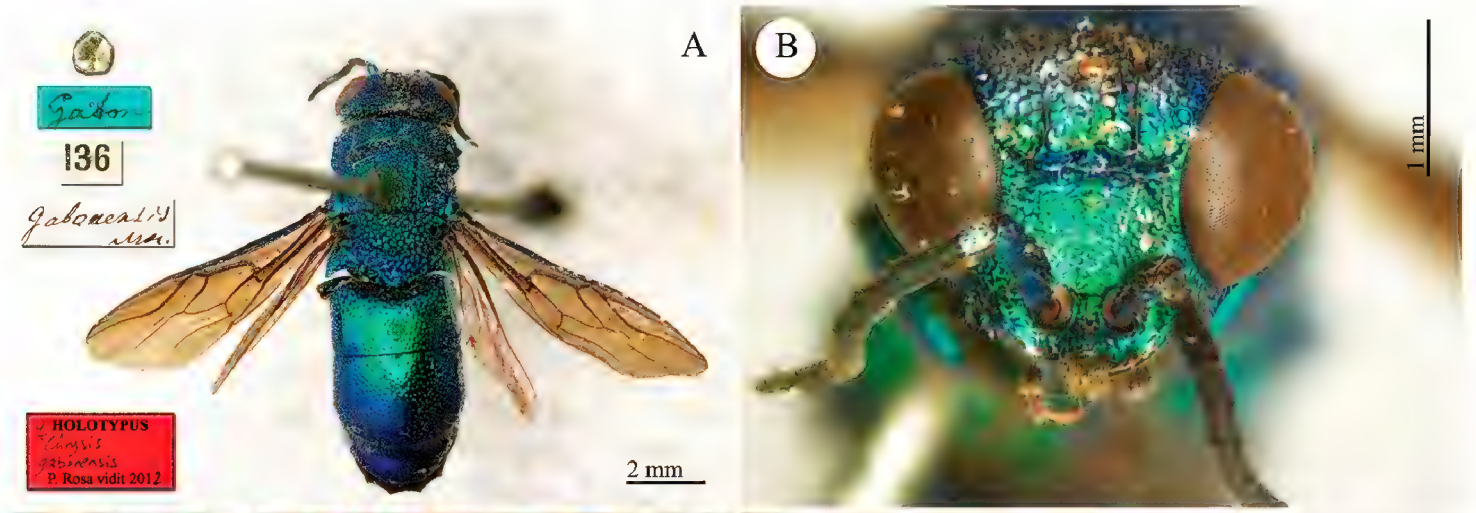
**Current status.** *Chrysis fulvicornis* Mocsáry, 1889.

### *Chrysis gabonensis* Mocsáry, 1889

Plate 20

*Chrysis* (*Hexachrysis*) *gabonensis* Mocsáry 1889: 384.

**Plate 19.** *Chrysis fulvicornis* Mocsáry, 1889, holotype. **A** Habitus, dorso-lateral view **B** second and third metasomal tergites, dorsal view **C** head, frontal view.



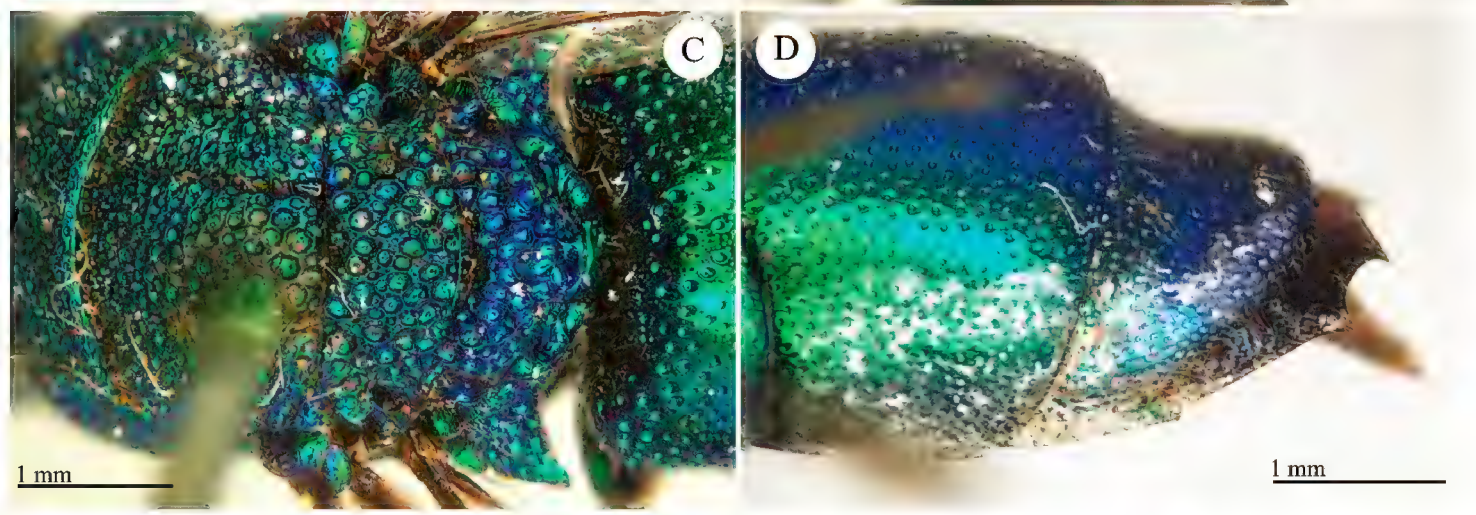




**Plate 20.** *Chrysis gabonensis* Mocsáry, 1889, holotype. **A** Habitus, dorsal view **B** head, frontal view **C** mesosoma, dorsal view **D** second and third metasomal tergite, lateral view.

**Type locality.** "Gabon Africæ occidentalis (Coll. Rad.)".

**Holotype** ♀ [box 62]: golden rounded label // Gabon [handwritten] [green label] // *gabonensis* Moc. [handwritten by Radoszkowski] // 136 [printed].

**Remarks.** *Chrysis gabonensis* belongs to the *C. smaragdula* group.

**Current status.** *Chrysis canaliculata* (Brullé, 1846) (synonymised by Kimsey and Bohart 1991).

### *Chrysis gertabi* Radoszkowski, 1891

*Chrysis Gertabi* Radoszkowski 1891a: 189.

**Type locality.** "Ashabad".

**Syntype** 1♂ [box 61]: golden rounded label // label with genitalia // Trans-Caspia [printed] [yellow label] // *gertabi* ♂ [handwritten by Radoszkowski] // Mus PAN Kraków [handwritten by Dylewska].

**Remarks.** A syntype male is housed in HNHM and bears the following labels: Ashabad *Gertabi* Rad. n. sp. <handwritten by Radoszkowski and Mocsáry> / Transcapia / *Chrysis mutabilis* v. *Germari* (!) Rad det. Mocsáry / id nr. 115619 HNHM Hym. coll. Another syntype is housed in MNHU. It belongs to the *C. cerastes* group.

**Current status.** *Chrysis mutabilis* du Buysson, 1887 (synonymised by Kimsey and Bohart 1991: 441).

### *Chrysis himalayensis* Mocsáry, 1889

Plate 21

*Chrysis* (*Pentachrysis*) *himalayensis* Mocsáry (in Radoszkowski) 1889: 31.

**Type locality.** "Himalaya".

**Holotype** ♂ [box 62]: golden rounded label // Hymaj [printed] [yellow label] // symbol // label with genitalia.

**Remarks.** Kimsey and Bohart (1991: 534) synonymised *Chrysis himalayensis* with *Praestochrysis shanghaiensis*. The affinity was already noticed by Radoszkowski (1889: 31). However, the type shows apparent differences in comparison with the male of *P. shanghaiensis*. In particular the double TFC, the relative length of antennomeres, the distance between the posterior ocelli, the shape of the metanotal projection, etc. These characteristics confirm that this species could be a valid species.

**Current status.** *Praestochrysis shanghaiensis* (Smith, 1874) (synonymised and transferred by Kimsey and Bohart 1991).

### *Chrysis indigotea* Dufour & Perris, 1840

*Chrysis indigotea* Dufour and Perris 1840: 38.

**Type locality.** France.

**Possible syntype** 1♀ [box 61]: golden rounded label // *indigotea* [handwritten by Radoszkowski] // *typ Dufour* [handwritten by Dufour] // AM [blue label].

**Remarks.** Syntypes were found in MNHN and other possible syntypes were found in MSNG (Coll. Gribodo) and LZM (Coll. Dahlbom). It belongs to the *C. ignita* group.

**Current status.** *Chrysis indigotea indigotea* Dufour & Perris, 1840.

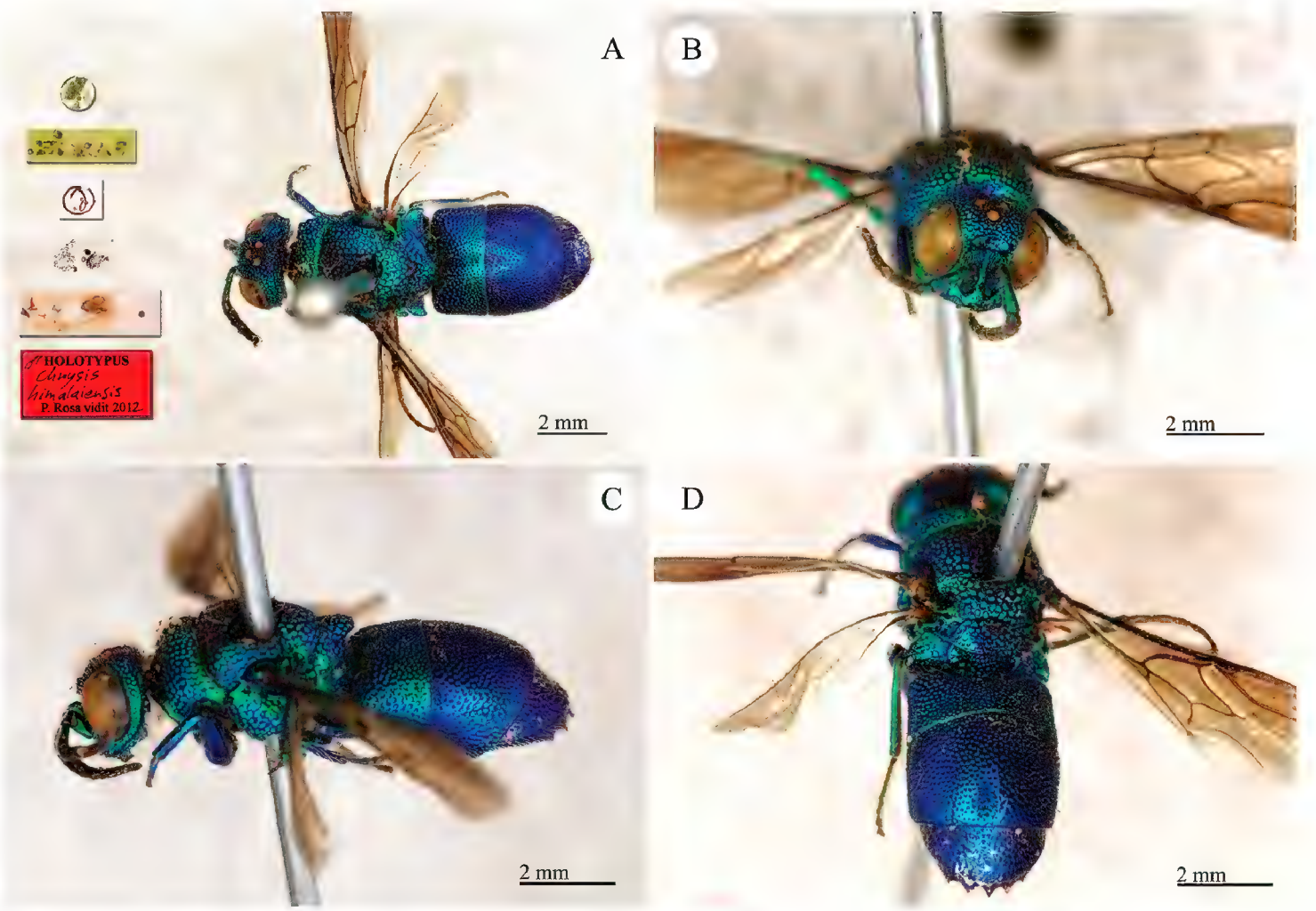



**Plate 21.** *Chrysis himalayensis* Mocsáry, 1889, holotype. **A** Habitus, dorsal view **B** head, frontal view **C** habitus, lateral view **D** metasoma, dorsal view.

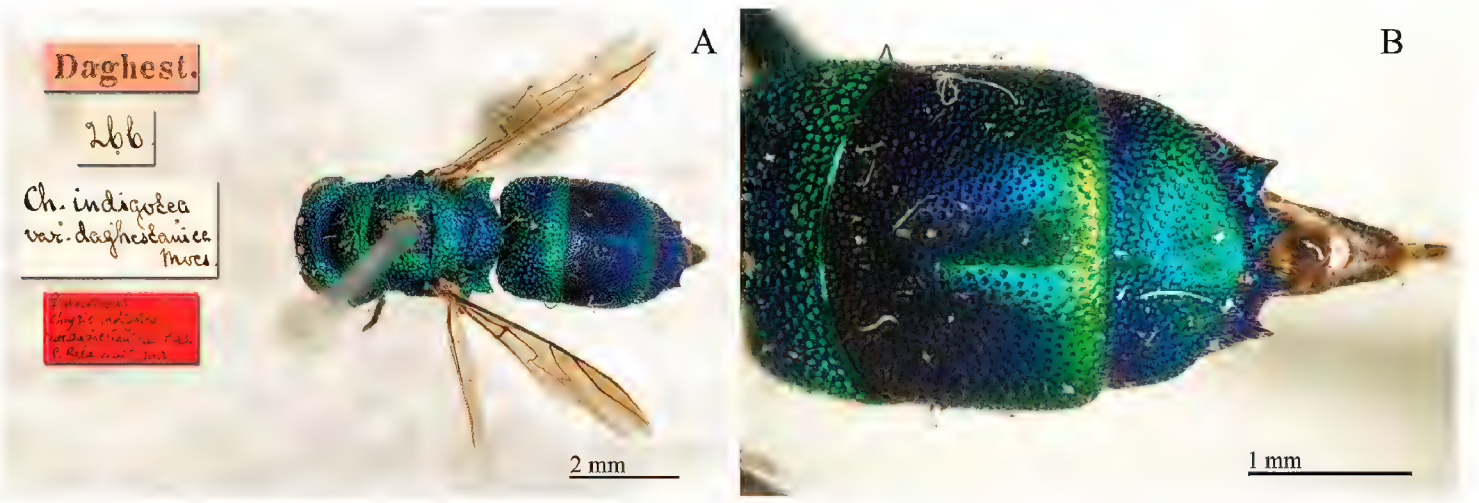



**Plate 22.** *Chrysis indigotea* var. *daghestanica* Mocsáry, 1889, holotype. **A** Habitus, dorsal view **B** metasoma, dorsal view.

## *Chrysis indigotea* var. *daghestanica* Mocsáry, 1889

Plate 22

*Chrysis* (*Tetrachrysis*) *indigotea* var. *daghestanica* Mocsáry 1889: 437.

**Type locality.** "Patria: Caucasus (Daghestan, Coll. Rad.)".

**Holotype** ♀ [box 61]: Daghest. [printed] [pink label] // 266 [handwritten by Mocsáry] // *Ch. indigotea* var. *daghestanica* Mocs. [handwritten by Mocsáry].

**Remarks.** Linsenmaier (1959: 162) considered *Chrysis indigotea daghestanica* as the central Asiatic subspecies of *C. indigotea*. It belongs to the *C. ignita* group.

**Current status.** *Chrysis indigotea daghestanica* Mocsáry, 1889 (Linsenmaier 1959).

### *Chrysis jelisyni* Radoszkowski, 1891

Plate 23

*Chrysis Jelisyni* Radoszkowski 1891a: 186.

**Type locality.** "Récoltée par M. Potanin, en Mongolie, (Kansu, Jelissyn-Kuce)".

**Syntype** ♀ [box 61]: golden rounded label // Kansu Jelisyn-Kuce 20/VII [handwritten] // *Jelisyni* [handwritten by Radoszkowski].

**Remarks.** Another syntype is preserved in MNHU. It belongs to the *C. comparata* group.

**Current status.** *Chrysis jelisyni* Radoszkowski, 1891.

### *Chrysis keriensis* Radoszkowski, 1887

Plate 24

*Chrysis* (*Tetrachrysis*) *keriensis* Radoszkowski 1887: 47.

**Type locality.** "Keria-Daria".

**Holotype** ♂ [not ♀] [box 61]: golden rounded label // Keria Daria Przewal [printed] [yellow label] // *Kerij* Rad [handwritten by Radoszkowski] // 192 [printed] // *Ch. Keriensis* M.S.GR T XXI [underlined] p. 47 [handwritten by Radoszkowski].

**Remarks.** *Chrysis keriensis* Radoszkowski, 1887 is the male of *C. chrysochlora* Mocsáry, 1889. It was treated only by Mocsáry (1889: 516), and listed in checklists by Dalla Torre (1892: 73), Bischoff (1913: 54), Kimsey and Bohart (1991: 427) and Kurzenko and Lelej (2007: 1005). Mocsáry (1889) redescribed the male type of *C. keriensis* immediately after the description of the female of *C. chrysochlora.* The differences observed by Mocsáry (1889) between *C. keriensis* and *C. chrysochlora* are dimorphic sexual dissimilarities.

**Current status.** *Chrysis keriensis* Radoszkowski, 1887.

### *Chrysis komarowi* Radoszkowski, 1891

*Chrysis Komarowi* Radoszkowski 1891a: 190.

**Type locality.** "Ashabad; envoyé par le général Komarow".

**Syntype** 1♀ [box 61]: golden rounded label // Frans-Caspi G. Turcmenien E. König [sic! Printed] // [small square pink label without any note] // Komarovy [handwritten by Radoszkowski].

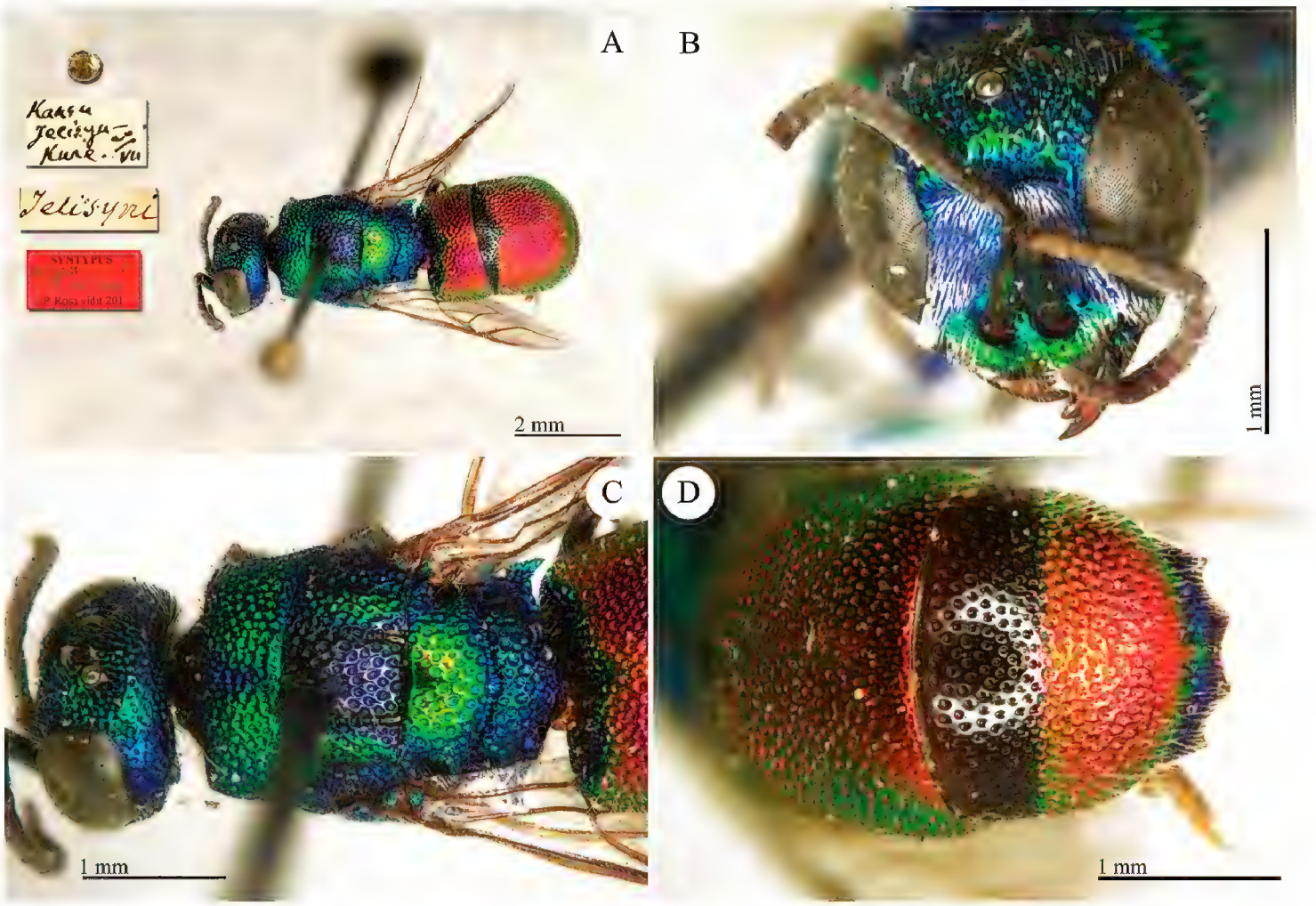



**Plate 23.** *Chrysis jelisyni* Radoszkowski, 1891, syntype. **A** Habitus, dorsal view **B** head, frontal view **C** mesosoma, dorsal view **D** third metasomal tergite, dorsal view.

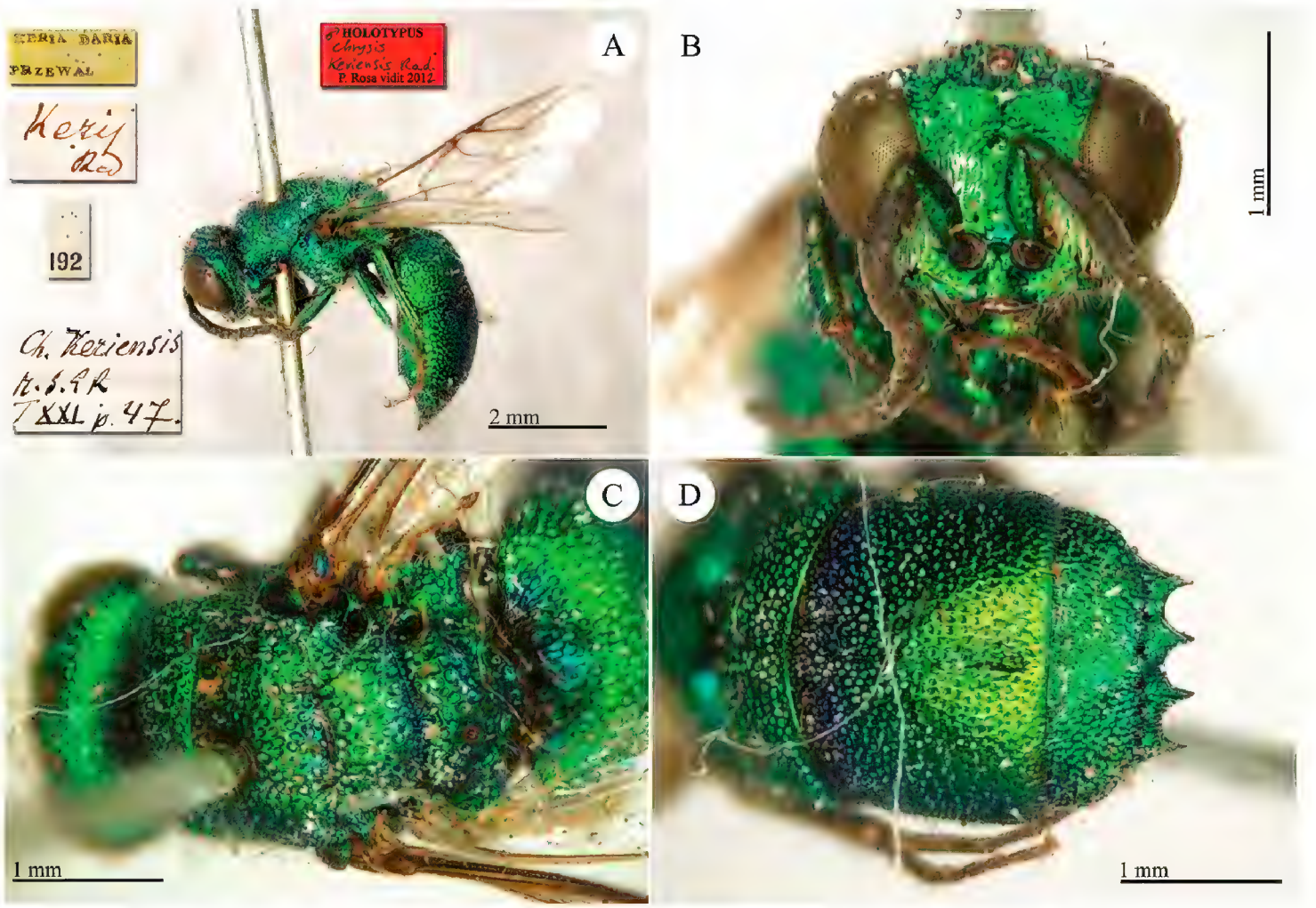



**Plate 24.** *Chrysis keriensis* Radoszkowski, 1887, holotype. **A** Habitus, lateral view **B** head, frontal view **C** mesosoma, dorsal view **D** third metasomal tergite, dorsal view.

**Syntype** 1♂ [box 61]: golden rounded label // Frans-Caspi G. Turcmenien E. König [sic! Printed].

**Remarks.** There are one male and one female in the collection bearing the same locality label: Frans-Caspi [sic] G. Turcmenien E. König. Both syntypes were collected by König and sent to Radoszkowski by Komarow. Another specimen with the same locality label is deposited in MNHN (general collection box 41). The female is badly damaged. It belongs to the *C. succincta* group.

**Current status.** *Chrysis komarowi* Radoszkowski, 1891.

### *Chrysis kriechbaumeri* Gribodo, 1879

*Chrysis kriechbaumeri* Gribodo 1879: 358.

**Type locality.** "Hab. in Nova-Hollandia".

**Possible Paralectotype** 1♀ [box 60]: golden rounded label // *Kriechbaum* [handwritten by Radoszkowski] // Nov. Holl. [printed] // 254 [printed] // label with the metasoma.

**Possible Paralectotype** 1♀ [box 60]: golden rounded label // Nov. Holl. [printed].

**Remarks.** The specimens are part of the type series described by Gribodo. Bohart (in Kimsey and Bohart 1991: 542) designated the lectotype in Drewsen's collection in ZMUC. Another paralectotype is housed in MSNG (Rosa 2009: 239). It belongs to the *P. faustus* group.

**Current status.** *Primeuchroeus kriechbaumeri* (Gribodo, 1879) (transferred by Bohart 1988: 24).

### *Chrysis lagodechii* Radoszkowski, 1889

Plate 25

*Chrysis* (*Olochrysis*) *Lagodechii* Radoszkowski 1889: 15.

**Type locality.** "Caucase (Lagodekhi)".

**Lectotype** ♂ [here designated] [box 60]: Cauca Mlokos [printed] // label with genital capsula // *Lagodechii* [handwritten by Radoszkowski] // 284 [handwritten by Mocsáry] // *angustifrons* [handwritten by Radoszkowski].

**Paralectotype** 1♂ [box 60]: Caucas [printed].

**Remarks.** Two males and one female collected in Caucasus were found under the name *Chrysis lagodechii* Rad. We consider the two males as types, and we exclude the female bearing the label "Eldar Caucas" [printed], because Radoszkowski did not mention any female in his description. This female specimen belongs to the genus *Chrysura*. Since various species are present under the same name, we here designate the lectotype based on one male of the type series. It belongs to the *C. elegans* group.

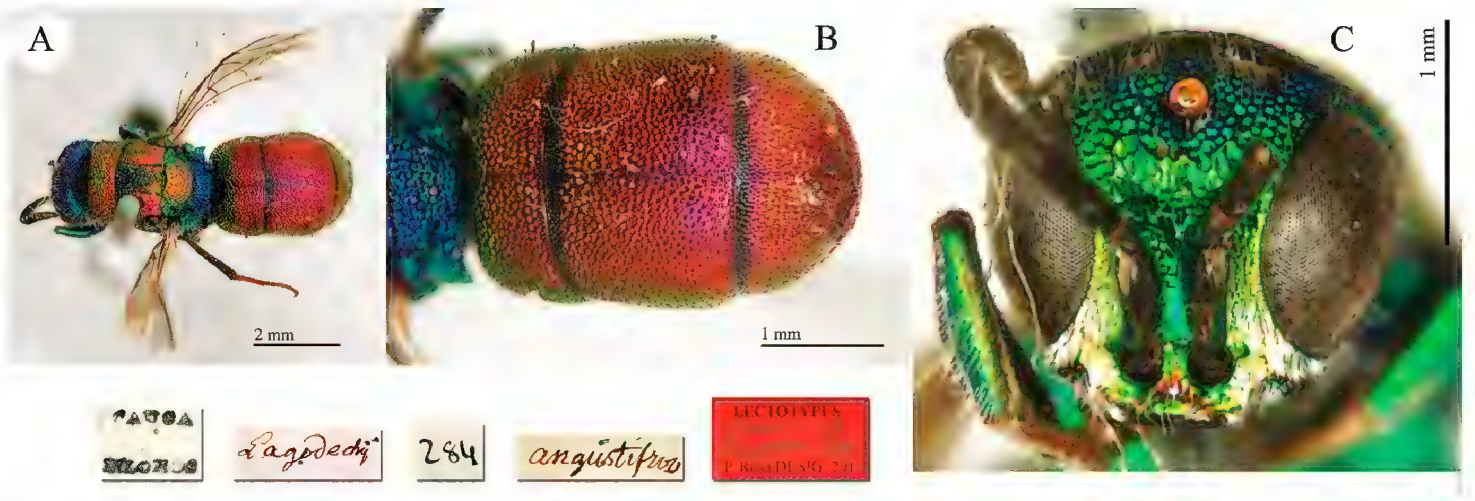



**Plate 25.** *Chrysis lagodechii* Radoszkowski, 1889, lectotype. **A** Habitus, dorsal view **B** metasoma, dorsal view **C** head, frontal view.

**Figure 3.** *Chrysis lepida* Mocsáry, 1889, paralectotype, habitus, dorsal view.

**Current status.** *Chrysis angustifrons* Abeille de Perrin, 1878 (synonymised by Mocsáry 1889: 274).

### *Chrysis lepida* Mocsáry, 1889

Figure 3

*Chrysis* (*Olochrysis*) *lepida* Mocsáry 1889: 278.

**Type locality.** "Patria: Caucasus (Coll. Rad.!, Erivan, Mus. Hung.)".

**Paralectotype** 1♀ [box 60]: golden rounded label // Caucas Port [printed] [light blue label] // Erevan [?] [handwritten by Radoszkowski] // *Lepida* Mocs [handwritten by Radoszkowski] // 114 [printed].

**Remarks.** The specimen is partly damaged, and the metasoma is glued to the mesosoma. Mocsáry (1889) described *Chrysis lepida* based on at least two specimens collected at Erivan and preserved in the Radoszkowski collection and in HNHM. Bohart (in Bohart and French 1986: 342) designated the lectotype in HNHM. The lectotype housed in HNHM bears the labels: Kaukasus Erivan / *lepida* Mocs. typ. det. Mocsáry / red label / Holotypus *Chrysis lepida* ♀ Mocs. RM Bohart / id nr. 135152 HNHM Hym. coll. It belongs to the *C. elegans* group.

**Current status.** *Chrysis lepida* Mocsáry, 1889.

### *Chrysis luzonica* Mocsáry, 1889

*Chrysis* (*Trichrysis*) *luzonica* Mocsáry 1889: 328.

**Type locality.** "Lucon in insulis Philippinis (Coll. Rad.)".

**Holotype** ♀ [box 61]: Lucon [handwritten] [yellow label] // 275 [handwritten by Mocsáry] // *luzonica* Moc [handwritten by Radoszkowski].

**Current status.** *Trichrysis luzonica* (Mocsáry, 1889) (transferred by Kimsey and Bohart 1991: 572).

### *Chrysis maracandensis* Radoszkowski, 1877

Plate 26

*Chrysis maracandensis* Radoszkowski 1877: 14.

**Type locality.** "Habitat in valle Sarafschan et in desertis prope Taschkent", "Пойманъ 2 іюня въ Заравшанской долинѣ, 9 іюня 1869 г. въ Самаркандѣ и 28 мая 1871 г. въ степи между Сыръ-дарьей и Ташкентомъ" [collected on the 2nd of June in the Zaravshan Valley, 9th June 1869 at Samarkand and the 28th of May 1871 in steppe between Syr-Darya and Tashkent].

**Paralectotype** 1♂ [box 61]: golden rounded label // Ташкентъ [printed] 28. [printed] [pink label with red line] // Marakand [handwritten by Radoszkowski] // 14 [handwritten] // label with genitalia.

**Paralectotype** 1♂ [box 61]: golden rounded label // 9. [printed] [blue label] // Самаркандъ // 47 [printed].

**Remarks.** Lectotype designated by Bohart (in Kimsey and Bohart 1991: 436) based on a male housed in MMU. All the specimens are males and not females as written in the original description. In the Radoszkowski collection there is another specimen collected at Taschkent, also with the golden rounded label, which is not considered as a paralec-

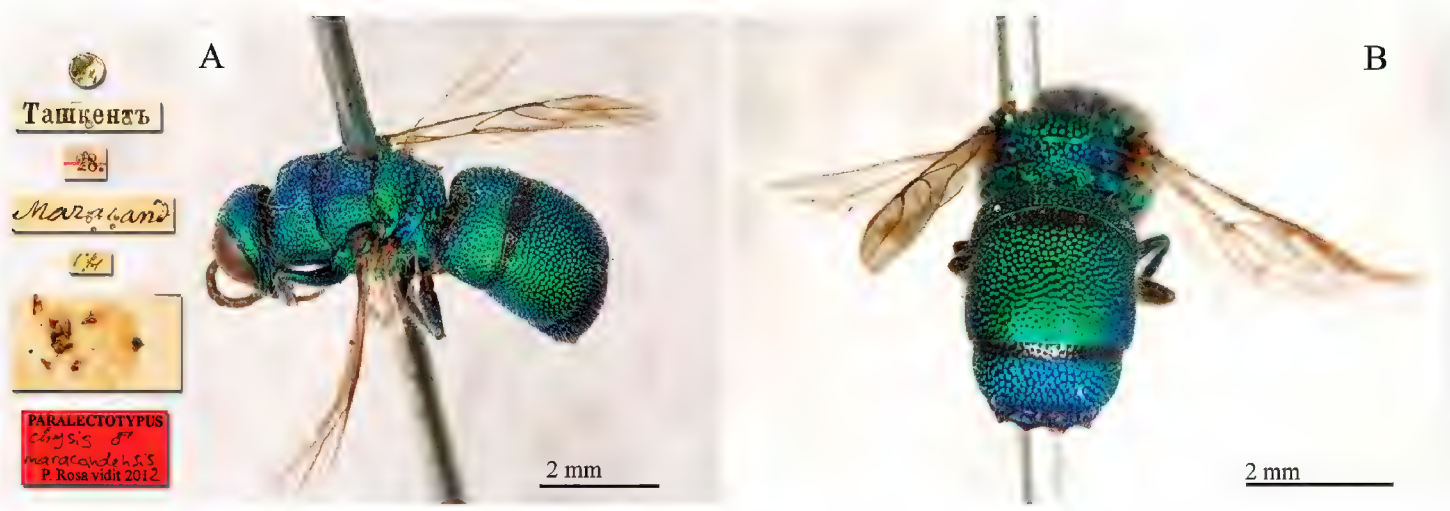



**Plate 26.** *Chrysis maracandensis* Radoszkowski, 1877, paralectotype. **A** Habitus, dorso-lateral view **B** habitus, dorsal view.

totype because the locality label is printed in Latin [Tachkend], while all the specimens described in 1877 bear labels printed in Cyrillic. It belongs to the *C. scutellaris* group.

**Current status.** *Chrysis maracandensis* Radoszkowski, 1877.

### *Chrysis maracandensis* var. *simulatrix* Radoszkowski, 1891

*Chrysis maracandensis* var. *simulatrix* Radoszkowski 1891a: 185.

**Type locality.** "Ashabad".

**Syntype** 1♂: Trans-Caspia [printed] [yellow label] // var. *simulatilis* [handwritten by Radoszkowski].

**Remarks.** Radoszkowski described *C. maracandensis* var. *simulatrix* based on a syntype series. In his collection there are five specimens under the label *simulatilis* (sic). Four of them were collected at Sarakhs, while the fifth was collected in "Trans-Caspia" and bears the label handwritten by Radoszkowski "var. *simulatilis*". The latter can be considered as a syntype, in the same way of other species described in 1891 and bearing the same locality label. All the specimens belong to *C. maracandensis* Radoszkowski. Therefore the synonym: *Chrysis maracandensis* var. *simulatrix* Radoszkowski, 1891 = *Chrysis maracandensis* Radoszkowski, 1877, is here proposed. Another possible syntype is housed in MNHN (general collection box 41). It belongs to the *C. scutellaris* group.

**Current status.** *Chrysis maracandensis* Radoszkowski, 1877.

### *Chrysis marginata* Mocsáry, 1889

Plate 27

*Chrysis* (*Tetrachrysis*) *marginata* Mocsáry 1889: 451.

**Type locality.** "Turkestania (Coll. Rad.)".

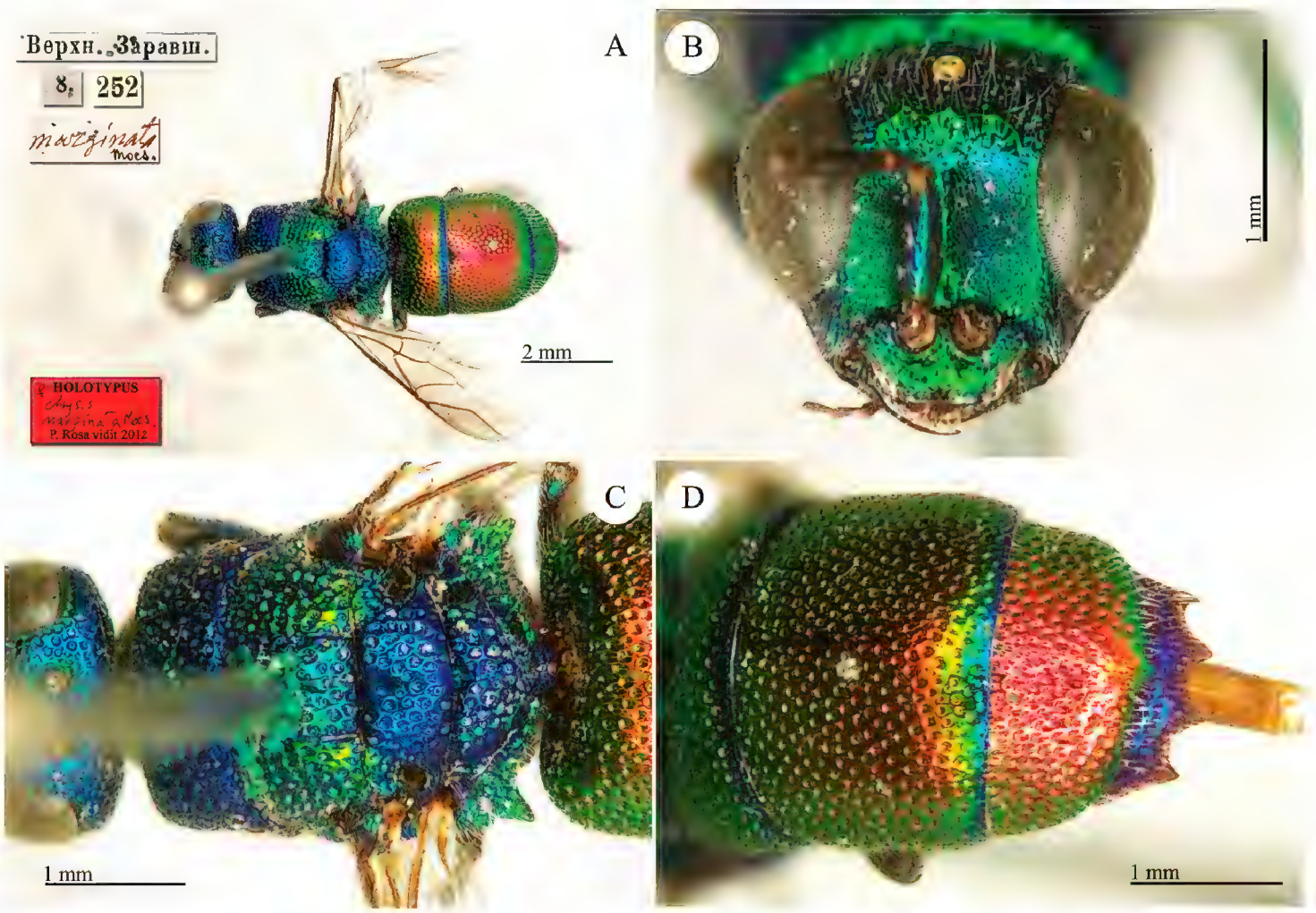



**Plate 27.** *Chrysis marginata* Mocsáry, 1889, holotype. **A** Habitus, dorsal view **B** head, frontal view **C** mesosoma, dorsal view **D** second and third metasomal tergites, dorsal view.

**Holotype** ♀ [box 61]: Верхн. Эаравш. // 8. [printed] [pink label] // *marginata* [handwritten by Radoszkowski] Mocs. [handwritten by Mocsáry] // 252 [printed].

**Remarks.** The type is partly damaged: it lacks the left antenna, nine flagellomeres of the right one, and the left fore-leg after the coxa. It belongs to the *C. comparata* group.

**Current status.** *Chrysis marginata* Mocsáry, 1889.

### *Chrysis minutissima* Radoszkowsky, 1877

*Chrysis minutissima* Radoszkowsky 1877 (1876): 147.

**Type locality.** "Egypte et Abyssinie" [written in the introduction].

**Holotype** ♂ [not ♀] [box 61]: golden rounded label // Egypt C. Bra [Comte Branicki] [printed] [blue label] // *minutissim* [handwritten by Radoszkowski] // 54 [printed].

**Remarks.** The correct locality is Egypt, even if in the original description the locality is not clearly indicated. It belongs to the *C. succincta* group.

**Current status.** *Chrysis minutissima* Radoszkowsky, 1877.

### ***Chrysis mirabilis* Radoszkovsky, 1877**

*Chrysis mirabilis* Radoszkovsky 1877 (1876): 106.

**Type locality.** "Envoyée du Caucase par Mr. Mlokosiewitz".

**Holotype** ♂ [box 61]: golden rounded label // Cauca Mlokos [printed] // 55 [handwritten] // label with genitalia // 50 [printed] // *mirabilis* Rad. [handwritten by Radoszkowski].

**Remarks.** The type is in bad condition, it lacks antennae, the left forewing, as well as part of the left hind-leg. A possible syntype is housed in MNHU. It belongs to the *C. facialis* group.

**Current status.** *Chrysis mirabilis* Radoszkovsky, 1877.

### ***Chrysis mlokosewitzi* Radoszkowski, 1889**

Plate 28

*Chrysis* (*Olochrysis*) *Mlokosewitzi* Radoszkowski 1889: 13.

**Type locality.** "Caucase".

**Holotype** ♂ [not ♀] [box 60]: golden rounded label // Caucasus [printed] // *mlokosewitz* [handwritten by Radoszkowski] [light blue label] // 115 [printed].

**Remarks.** The holotype is a rufescent specimen belonging to the genus *Chrysura* and the *C. dichroa* group.

**Current status.** *Chrysura mlokosewitzi* (Radoszkowski, 1889), **comb. n.**

### ***Chrysis mocsaryi* Radoszkowski, 1889**

Figure 4

*Chrysis* (*Tetrachrysis*) *Mocsaryi* Radoszkowski 1889: 29.

**Type locality.** "apportée par Mr. Potanin de Mongolie (Kobden [currently Kobdo])".

**Holotype** ♀ [box 61]: label with right flagellum and metasoma // golden rounded label // Kansu Kobden-Owatu 12/VIII [handwritten] // *Mocsáry* [handwritten by Radoszkowski] // *Chrysis Mocsaryi* Rad. (tres interep.) [?] [handwritten by Mocsáry] // Mus. Pan Krakow [hadwritten by Dylewska].

**Remarks.** The type is damaged: the right flagellum and the metasoma are glued on a label. It belongs to the *C. comparata* group.

**Current status.** *Chrysis mocsaryi* Radoszkowski, 1889.

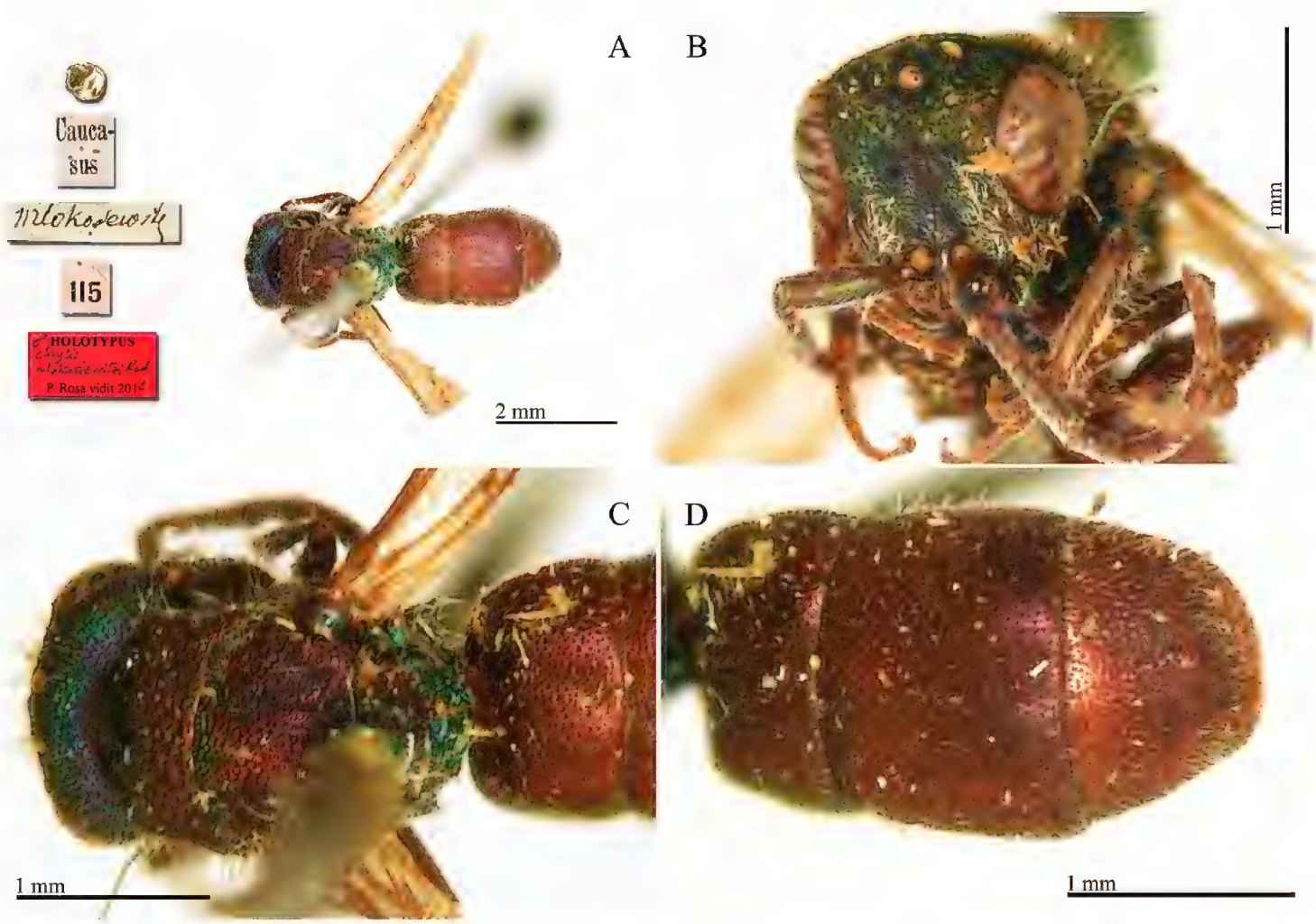



**Plate 28.** *Chrysis mlokosewitzi* Radoszkowski, 1889, holotype. **A** Habitus, dorsal view **B** head, frontal view **C** mesosoma, dorsal view **D** metasoma, dorso-lateral view.

**Figure 4.** *Chrysis mocsaryi* Radoszkowski, 1889, holotype, head and mesosoma + metasoma, dorsal view.

### *Chrysis murgrabi* Radoszkowski, 1891

*Chrysis Murgrabi* Radoszkowski 1891a: 196.

**Type locality.** "Murgrab".

**Syntype** (?) 1♂ [box 61]: golden rounded label // Tr-Cap Saraks // *Murgrabi* [handwritten by Radoszkowski] // Museum PAN Krakow [handwritten by Dylewska].

**Remarks.** According to Kimsey and Bohart (1991: 435) the syntypes of *Chrysis murgrabi* are preserved in the Radoszkowski collection. The description of *C. murgrabi* was based on one male and one female, but now there is only one male specimen left in the collection. It is badly damaged, the right forewing is missing, and the metasoma was found in the box and glued on a separate label. The locality given on the label (Transcaspia) is not accurate, compared with the locality given in the text (Murgrab = Murgab, currently in Tajikistan), however it cannot be excluded from the syntypes based only the locality, because the specimens described by Radoszkowski in 1891 bear not precise locality labels. Radoszkowski (1893b: 81) emended the name to *C. murgabi*, but this name must be considered as an unjustified emendation according to the Art. 32.5.1 of the Code. It belongs to the *C. maculicornis* group.

**Current status.** *Chrysis maculicornis* Klug, 1845 (synonymised by Kimsey and Bohart 1991).

### *Chrysis obscura* Radoszkovsky, 1877

Plate 29

*Chrysis obscura* Radoszkovsky 1877 (1876): 106.

**Type locality.** "Envoyée du Caucase par Mr. Mlokosiewitz".

**Holotype** ♂ [box 61]: golden rounded label // Cauca Mlokos [printed] // 130 [printed] // *obscura* Rad *chalcochrysa* Mocs [handwritten by Radoszkowski] // *undulata* Rad. [handwritten by Mocsáry].

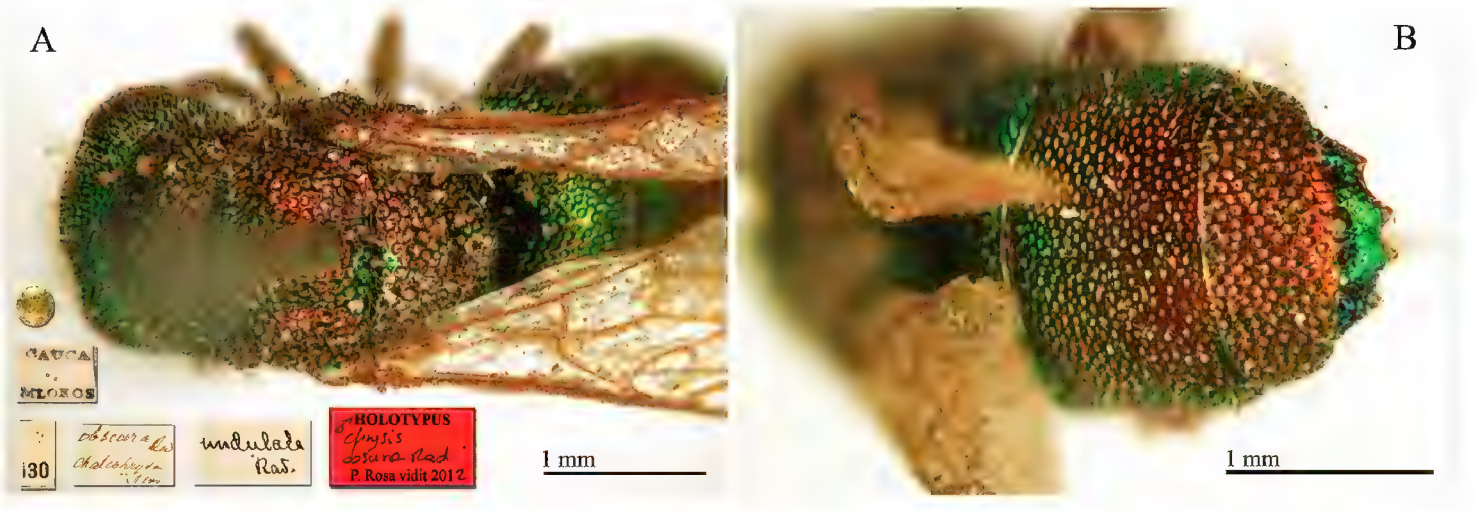



**Plate 29.** *Chrysis obscura* Radoszkovsky, 1877, holotype. **A** Mesosoma, dorsal view **B** third metasomal tergite, dorsal view.

**Remarks.** Kimsey and Bohart (1991: 461) placed *Chrysis chalcochrysa* in synonymy with *C. scutellaris* Fabricius, without type examination. *C. obscura* belongs to the *C. succincta* group and not to the *C. scutellaris* group. *C. chalcochrysa* is a valid taxon related to the *C. grohmanni* subgroup, with a unique colouration of the mesosoma.

**Current status.** *Chrysis chalcochrysa* Mocsáry, 1887, replacement name for *obscura* Radoszkovsky *nec* Smith, 1859, **status revived**.

### *Chrysis octavii* du Buysson, 1895

Plate 30

*Chrysis octavii* du Buysson (in André) 1895: 476.

**Type locality.** "Égypte (Radoszkowsky); Sicile".

**Syntype** 1♀ [box 61]: Taczano [printed] // Egyptus. [printed] [blue label] // *episcopalis* [handwritten by Rad.] // 92 [printed] // *Chrysis* (*Pyria*) *Octavii* Buyss. n.sp. [handwritten by du Buysson] [orange label].

**Remarks.** The type is badly damaged, missing the compound eyes, some legs and the ventral surface (including the internal segments). The second syntype is housed in MNHN. It belongs to the *C. taczanovskii* group.

**Current status.** *Chrysis chlorospila* Klug, 1845 (synonymised by Bischoff 1913: 49).

### *Chrysis oraniensis* var. *portentosae* Radoszkowski, 1891

*Chrysis oraniensis* var. *portentosae* Radoszkowski 1891a: 184.

**Type locality.** "Je possède un exemplaire provenant d'Amasis".

**Holotype** ♀ [box 60]: Amasis [handwritten] // Algeria [printed] [blue label] // *orian* var. *portentosa* [handwritten by Radoszkowski].

**Remarks.** Under the locality label 'Amasis' there is a second locality label: Algeria. The species was described based on one specimen collected at Amasis (not "Atrek", in Kimsey and Bohart 1991: 493). Algeria is the locality of the nominal species. It belongs to the *C. cuprea* group.

**Current status.** *Chrysura oraniensis* (Lucas, 1849) (synonymised by Trautmann 1927: 117; transferred by Kimsey and Bohart 1991: 493).

### *Chrysis patriarchalis* Radoszkovsky, 1880

*Chrysis patriarchalis* Radoszkovsky 1880 (1879): 142.

**Type locality.** "Etschmiadzine".

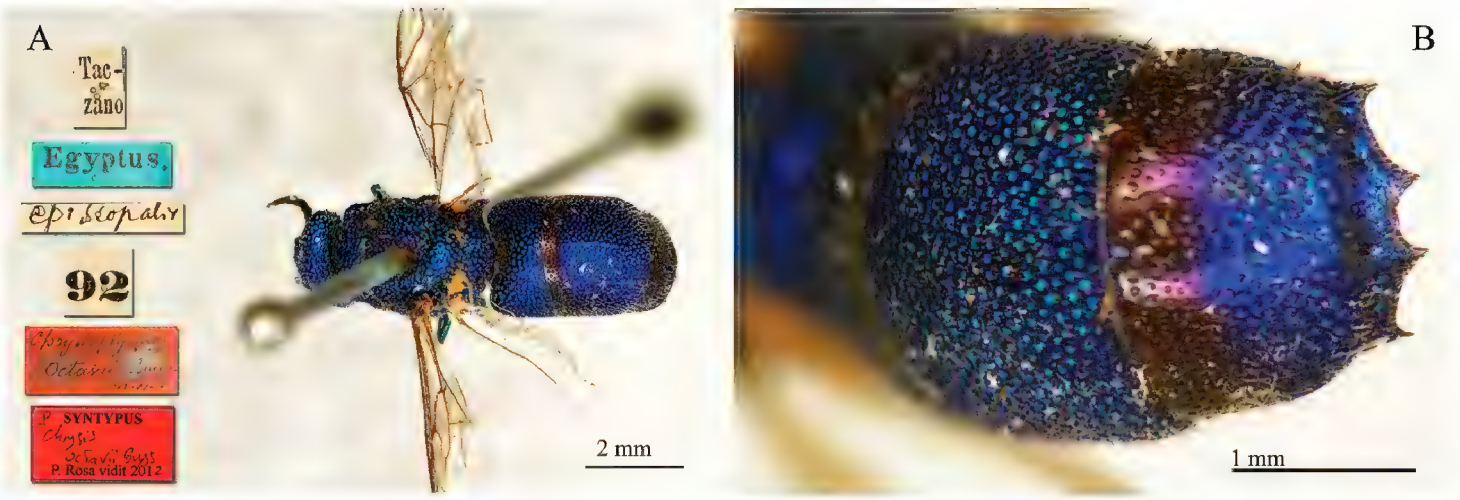



**Plate 30.** *Chrysis octavii* du Buysson, 1895, syntype. **A** Habitus, dorsal view **B** third metasomal tergite, dorsal view.

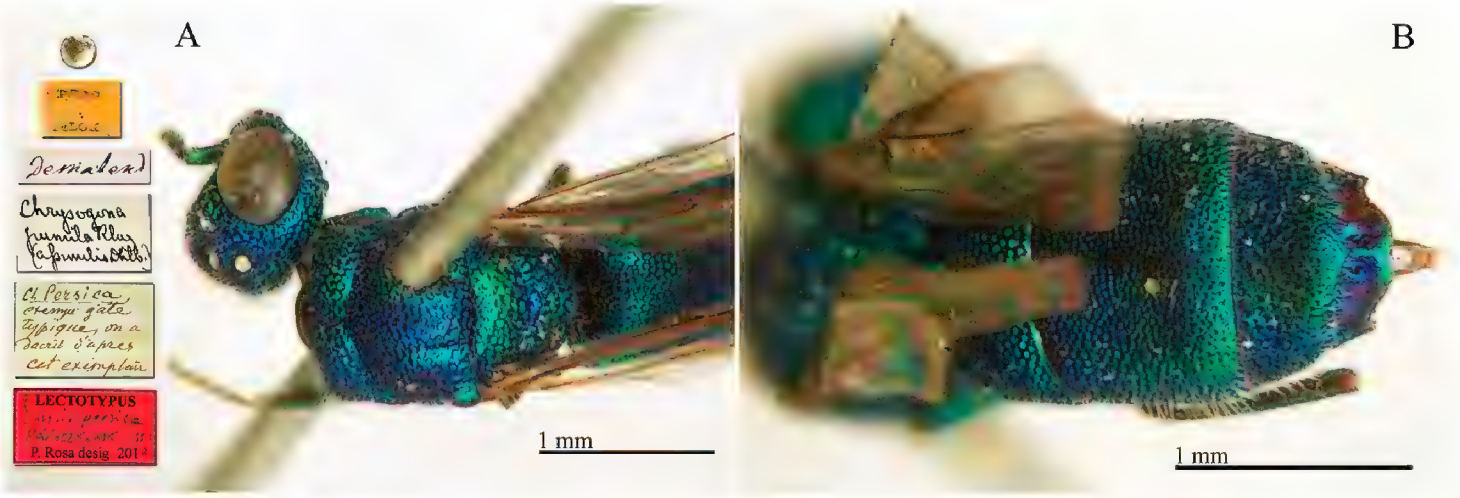



**Plate 31.** *Chrysis persica* Radoczkowsky, 1881, lectotype. **A** Mesosoma, dorsal view **B** second and third metasomal tergites, dorsal view.

**Syntype** 1♂ [box 60]: golden rounded label // Erivan [handwritten] // 10 [printed] // *Patriarchalis* [handwritten].

**Remarks.** The description of *Chrysis patriarchalis* was based on syntypes. The type locality Etschmiadzine (= Etchmiadzin), currently Vagharshapat, Armenia, is close to Erivan.

**Current status.** *Spintharina versicolor* (Spinola, 1808) (synonymised by Mocsáry 1887: 15; transferred by Kimsey and Bohart 1991: 558).

### *Chrysis persica* Radoczkowsky, 1881

Plate 31

*Chrysis persica* Radoczkowsky 1881: v.

**Type locality.** "Persia, mons Demavend".

**Lectotype** ♀ (here designed) [box 60]: golden rounded label // Pers Mlok [printed] [orange label] // Demabend [handwritten by Radoszkowski] // *Chrysogona pumila*

Klug (*assimilis* Dhlb.) [handwritten by Mocsáry] // *Ch. Persica* exempl [...]gate typique, on a decrib d'apres cet exemplars [handwritten, partly unreadable].

**Paralectotype** 1♀ [box 60]: golden rounded label // Pers Mlok [printed] [orange label] // Demabend [handwritten by Radoszkowski] // 53 [printed] // *persica* [handwritten by Radoszkowski] // *Chrysogona pumila* Klug (*assimilis* Spin.) [handwritten by Mocsary].

**Remarks.** After Mocsáry's monograph (1889: 183), *C. persica* was always considered as a synonym of *C. pumila* Klug. Linsenmaier (1959: 171) revalidated the taxon at first, but after a few years he changed his interpretation and placed *C. persica* again in synonymy with *C. pumila* (Linsenmaier 1987: 155). Since one of the two syntypes is seriously damaged, we here designate the lectotype of *C. persica* and confirm that it is synonym of *C. pumila* Klug, 1845 (= *C. pumila sensu* Linsenmaier (1987)); the case is discussed in detail in Rosa and Xu (2015). The lectotype lacks some flagellomeres (3–11) from the left antenna, some tarsi on the left fore-leg; head and propleurae are partially separated from the rest of the body.

**Current status.** *Chrysidea pumila* (Klug, 1845) (synonymised by Linsenmaier 1987; transferred by Kimsey and Bohart 1991).

### *Chrysis poecilochroa* Mocsáry, 1889

Plate 32

*Chrysis* (*Tetrachrysis*) *poecilochroa* Mocsáry (Inedité) (in Radoszkowski) 1889: 27.

**Type locality.** "Algérie".

**Holotype** ♂ [box 61]: golden rounded label // Algeria [printed] [blue label] // *poecilochroa* Mocs [handwritten by Radoszkowski] // 123 [printed] // label with genitalia.

**Remarks.** Linsenmaier (1968: 110) considered *Chrysis poecilochroa* the northern African subspecies of *C. distincta* Mocsáry. Kimsey and Bohart (1991: 405) considered *C. poecilochroa* as a synonym of *C. distincta* Mocsáry, 1887. It belongs to the *C. cerastes* group.

**Plate 32.** *Chrysis poecilochroa* Mocsáry, 1889, holotype. **A** Habitus, dorsal view **B** metasoma, dorsal view **C** head, frontal view.

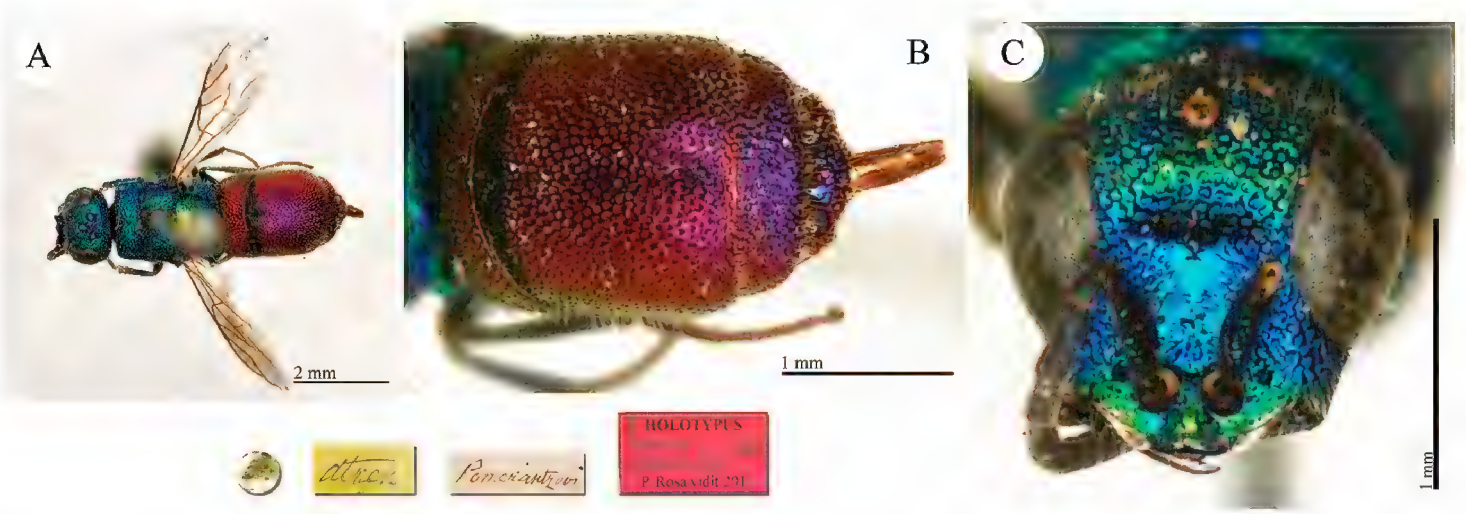



**Plate 33.** *Chrysis pomerantzovi* Radoszkowski, 1891, holotype. **A** Habitus, dorsal view **B** metasoma, dorsal view **C** Head, frontal view.

**Current status.** *Chrysis distincta* Mocsáry, 1887 (synonymised by Kimsey and Bohart 1991).

### *Chrysis pomerantzovi* Radoszkowski, 1891

Plate 33

*Chrysis Pomerantzovi* Radoszkowski 1891a: 184.

**Type locality.** "Atrek".

**Holotype** ♀ [box 60]: Atrek [handwritten] [yellow label] // *Pomerantzovi* [handwritten by Radoszkowski].

**Remarks.** The type lacks the left flagellum. It belongs to the *C. aestiva* group.

**Current status.** *Chrysis pomerantzovi* Radoszkowski, 1891.

### *Chrysis potanini* Radoszkowski, 1891

Figure 5

*Chrysis Potanini* Radoszkowski 1891a: 186.

**Type locality.** "Récoltée par M. Potanin en Mongolie (Tufyn)".

**Holotype** ♂ [box 61]: golden rounded label // *potanini* [handwritten by Radoszkowski] // Mongol. mer. Tufyn 11/VII [handwritten] // label with genitalia // Mus. PAN Krakow [handwritten by Dylewska].

**Remarks.** The type lacks the right flagellum and some tarsi on the left hind-leg. It belongs to the *C. comparata* group.

**Current status.** *Chrysis potanini* Radoszkowski, 1891.

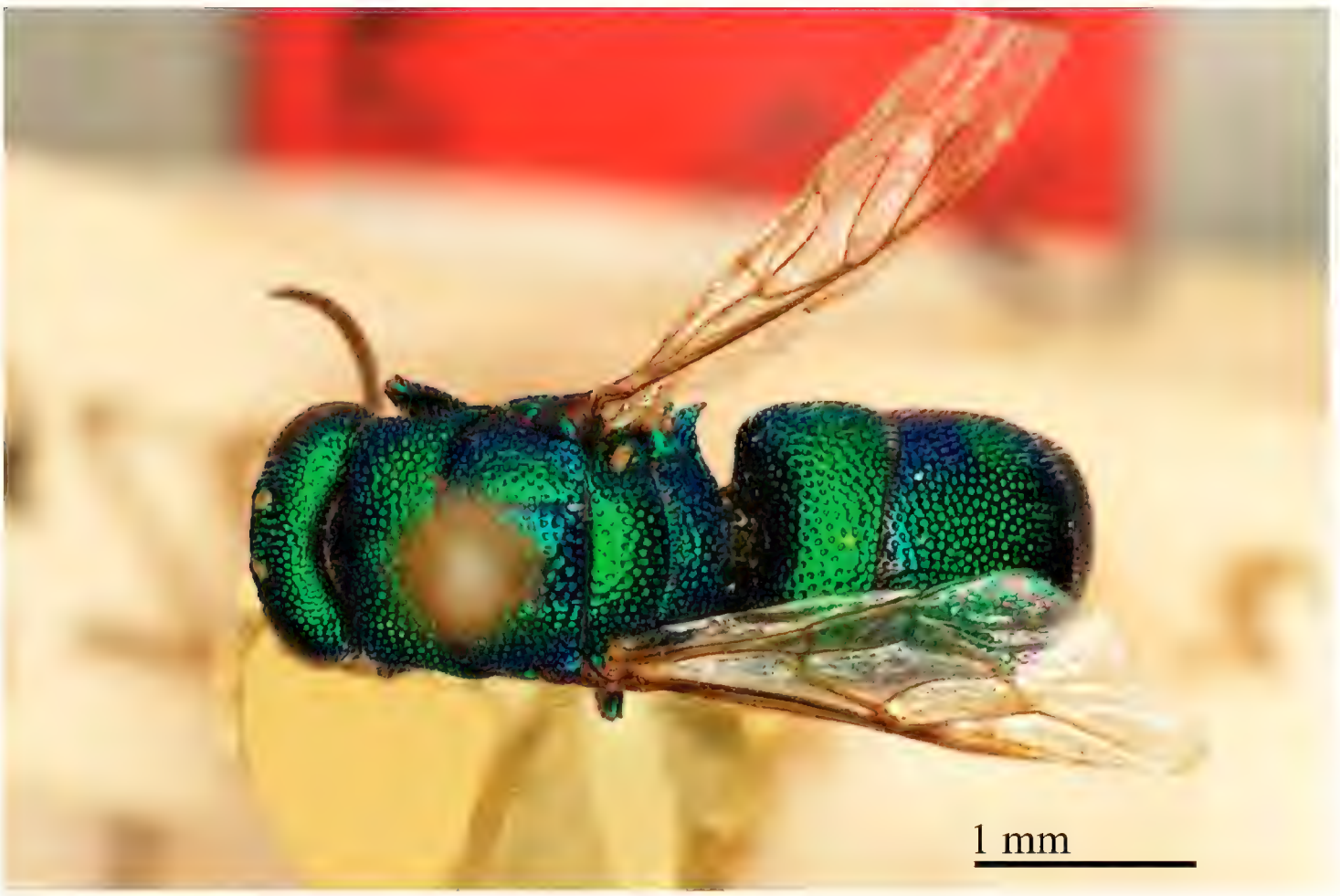



**Figure 5.** *Chrysis potanini* Radoszkowski, 1891, holotype, habitus, dorsal view.

***Chrysis przewalskii* Radoszkowski, 1887**
Plate 34

*Chrysis* (*Tetrachrysis*) *Przewalskii* Radoszkowski 1887: 46.

**Type locality.** "Zaïdam, les chaines des montagnes Keria (9000')".

**Holotype** ♂ [box 61]: label with the metasoma // golden rounded label // Caidom Przewal [printed] [yellow label] // n.sp *Przewalski* [handwritten by Radoszkowski] // 191 [printed].

**Remarks.** The type is damaged, missing of the right hind-leg and some tarsi from the left mid- and hind-legs; the metasoma is glued on a label. It is included in the *C. pulchella* group (Kimsey and Bohart 1991: 452).

**Current status.** *Chrysis przewalskii* Radoszkowski, 1887.

***Chrysis pulchra* Radoszkovsky, 1880**
Figure 6

*Chrysis pulchra* Radoszkovsky 1880 (1879): 143.

**Type locality.** "Caucase" [written in the introduction].

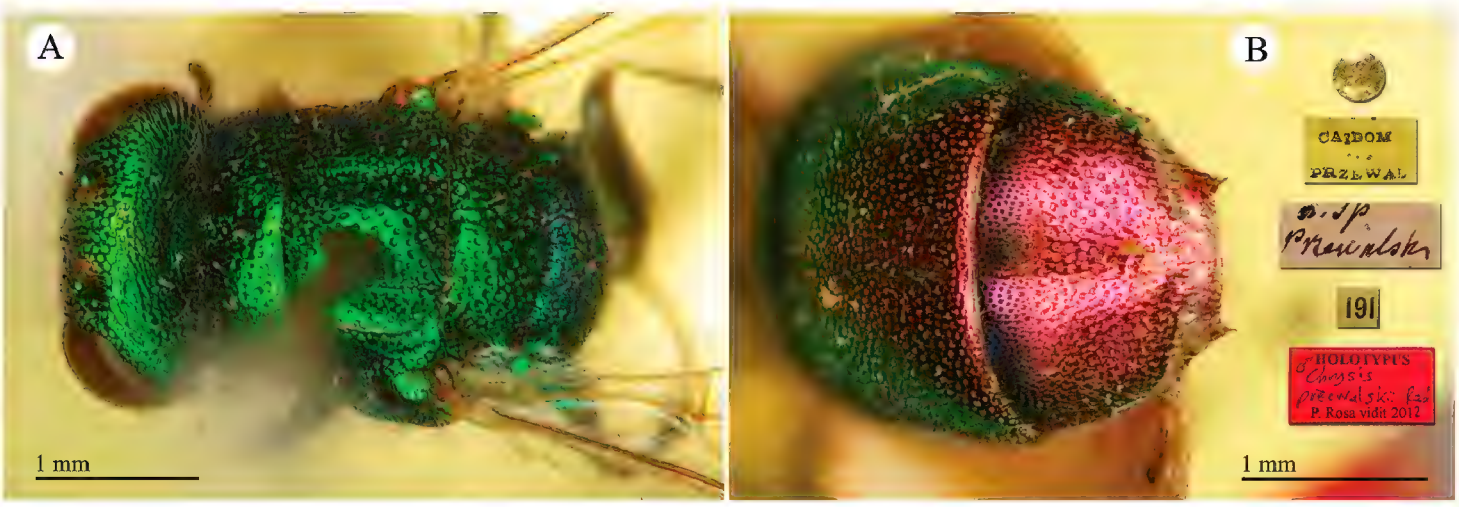



**Plate 34.** *Chrysis przewalskii* Radoszkowski, 1887, holotype. **A** Head and mesosoma, dorsal view **B** third metasomal tergite, dorsal view.

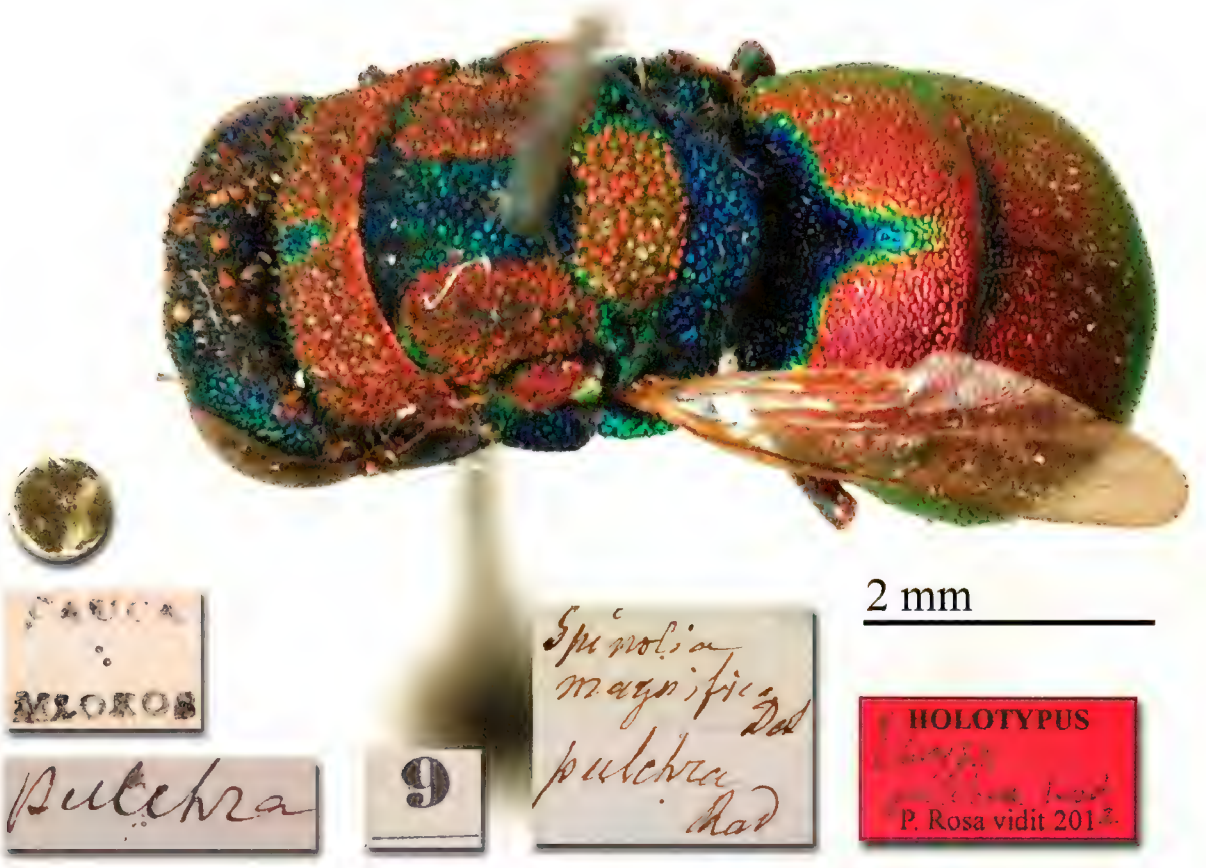



**Figure 6.** *Chrysis pulchra* Radoszkovsky, 1880, holotype, habitus, dorsal view.

**Holotype** ♀ (not ♂) [box 62]: golden rounded label // Cauca Mlokos [printed] // 9 [printed] // *pulchra* [handwritten by Radoszkowski] // *Spinolia magnifica* Dah *pulchra* Rad [handwritten by Radoszkowski].

**Remarks.** *Chrysis pulchra* Radoszkovsky, 1880 and *C. sulcata* Radoszkovsky, 1866 *nec* Dahlbom, 1845 were synonymised with *C. lamprosoma* Förster, 1853 [currently *Spinolia*] by Mocsáry (1887: 16). Few years later Mocsáry (1896: 2) described *Chrysis* (*Spinolia*) *dallatorreana* based on the specimens housed in HNHM.

*S. dallatorreana* is now found to be a synonym of *S. pulchra* Radoszkovsky, 1880. However, *S. dallatorreana* is currently in use after Mocsáry's monograph (1889), even if Kimsey and Bohart (1991: 551) placed it in synonymy with *S. insignis* (Lucas, 1849).

Only two authors accepted the synonym: Mingo (1994: 225) and Tyrner (2007: 49; (in Macek et al.) 2010: 66). Kimsey (1986: 106) designated the lectotype of *S. dallatorreana* in MNHN, but Móczár (1964b: 448) already designated the lectotype, which is housed in HNHM and was checked.

In order to preserve the nomenclatural stability, we propose the reversal of precedence (Art. 23.9 of the Code) and we consider *Chrysis pulchra* as **nomen oblitum** and *Chrysis dallatorreana* as **nomen protectum**. According to Code, the reversal of precedence can be applied only when the two following conditions are both met: when the senior synonym has not been used as a valid name after 1899 (Art. 23.9.1.1) and when the the junior synonym has been used in at least 25 works, published by at least 10 authors in the immediately preceding 50 years and encompassing a span of not less than 10 years (23.9.1.2).

In this case, *S. pulchra* was never used again as a valid species name after 1887. Unfortunately, only 16 works citing *S. dallatorreana* were published in the last 50 years (excluding other three papers dated from 1954 to 1959); on the other hand, at least 10 authors considered *dallatorreana* as a valid name: Kimsey (1983: 145; 1986: 106); Linsenmaier (1968: 41; 1969: 354; 1987: 144; 1997: 261; 1999: 96; sub *Euchroeus* (*Spinolia*)); Mingo (1975: 135 sub *Euchroeus* (*Spinolia*)); Móczár (1964b: 448; 1967: 62); Negru (1965: 198); Rosa (2005: 36; 2006b: 92); Schmidt (1977: 107); Strumia and Yildirim (2009: 85); Wiśniowski and Strumia (2007: 81). Other three authors listed and described *S. dallatorreana*, but after the period of 50 years: Haupt (1956: 121), Linsenmaier (1959: 69) and Zimmermann (1954: 5). Since the conditions are not met, we apply to the Art. 23.9.3. of the Code: if the conditions of 23.9.1 are not met but nevertheless an author considers that the use of the older synonym or homonym would threaten stability or universality or cause confusion, and so wishes to maintain use of the junior synonym, he must refer the matter to the Commission for a ruling under the plenary power [Art. 81]. While the case is under consideration use of the junior name is to be maintained [Art. 82]. A paper with all the cases found in other museums will be soon forwarded to the ICZN. Meanwhile the name *S. dallatorreana* must be maintained.

**Current status.** *Spinolia dallatorreana* (Mocsáry, 1896), **nomen protectum**.

### *Chrysis remota* Mocsáry, 1889

Plate 35

*Chrysis* (*Tetrachrysis*) *remota* Mocsáry (in Radoszkowski) 1889: 21.

**Type locality.** "Patria: Demabend (in Persia) et Caucasus (a Domino Mlokosewitz detecta)".

**Lectotype** ♂ (here designed) [box 61]: golden rounded label // Pers Mlok [printed] [orange label] // Demabend [handwritten] // *Remota* Mocs [handwritten by Radoszkowski] // 129 [printed].

**Paralectotype** 1♂ [box 61]; Caucas Mlokos [printed] // label with genitalia.

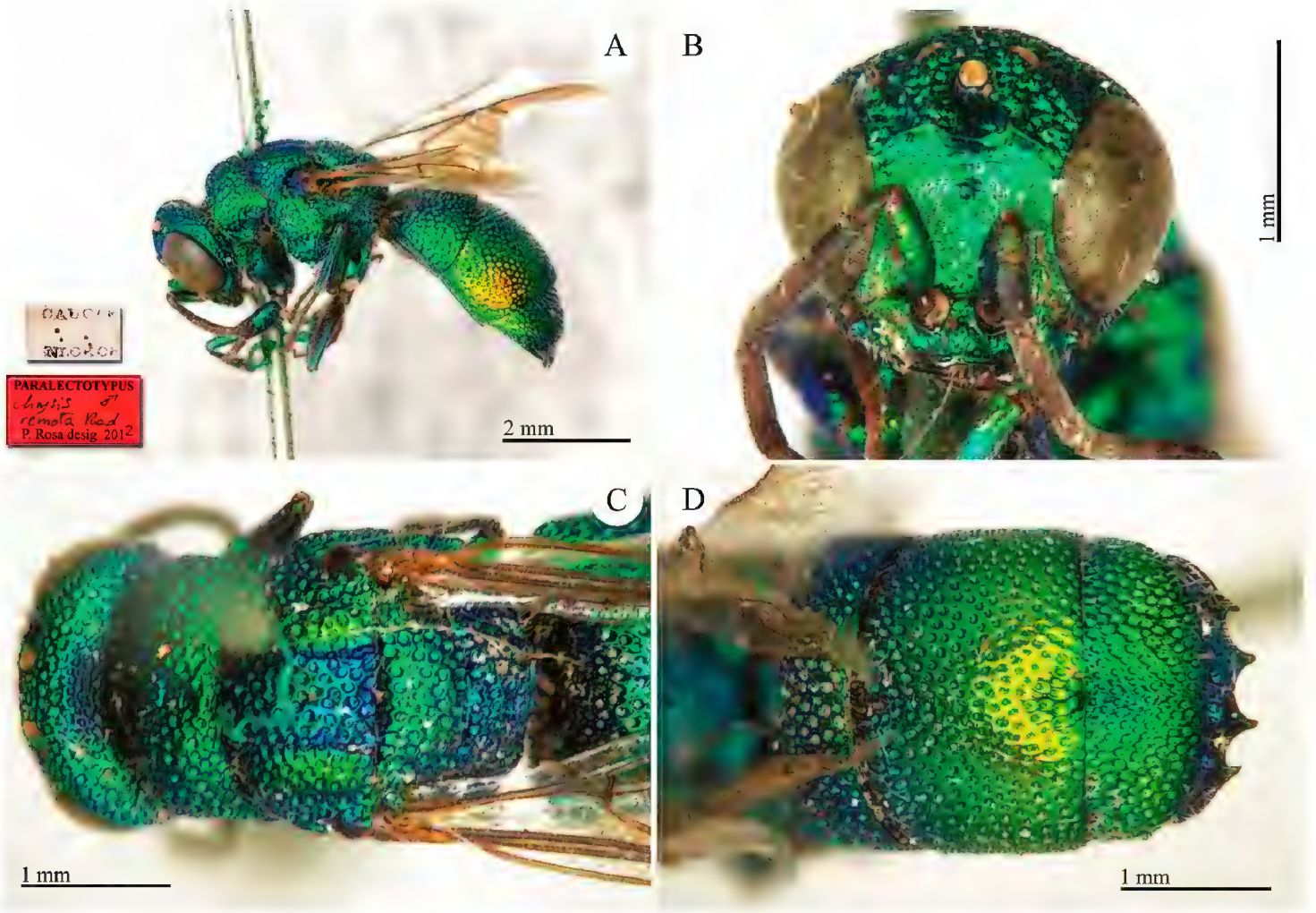



**Plate 35.** *Chrysis remota* Mocsáry, 1889, paralectotype. **A** Habitus, lateral view **B** head, frontal view **C** mesosoma, dorsal view **D** metasoma, dorsal view.

**Remarks.** According to interpretation of the species by Linsenmaier (1968) and Kimsey and Bohart (1991), *Chrysis remota* belongs to the *C. graelsii* group. The lectotype designation is necessary because the syntypes belong to two different species. The specimen selected as lectotype belongs to the *C. graelsii* group, while the paralectotype to the *C. maculicornis* group.

**Current status.** *Chrysis remota* Mocsáry, 1889.

### *Chrysis rutilans* var. *asiatica* Mocsáry, 1889

*Chrysis* (*Tetrachrysis*) *rutilans* var. *Asiatica* Mocsáry 1889: 448 *nec* Radoszkowski, 1889.

**Type locality.** "Turkestania, Taschkend (Coll. Rad.)".

**Syntype** 1♀ [box 61]: Tachkend [printed] // 214 [printed] // var. *asiatica* Mocs. [handwritten by Radoszkowski] // *splendidula* Dlb [handwritten by Radoszkowski].

**Syntype** 1♀ [box 61]: label with two legs and the metasoma // Ashabad [printed] [yellow label] // 244 [printed] // var. *asiati*. [handwritten by Radoszkowski].

**Remarks.** Semenov-Tian-Shanskij (1912) replaced the name in *C. insperata* ssp. *mesasiatica*. Another possible syntype is housed in MNHN (general collection box 48). It belongs to the *C. splendidula* group.

**Current status.** *Chrysis decora* Mocsáry, 1889 (replacement name for *Chrysis superba* Radoszkowski, 1877) (synonymised by Kimsey and Bohart 1991: 402).

### *Chrysis sabulosa* Radoszkowski, 1877

*Chrysis sabulosa* Radoszkowski 1877: 24.

**Type locality.** "Habitat in monte Karak", "Три ♂ этого вида пойманы 7 мая 1871 г. на горѣ Каракъ" [Three males of this species were collected on the 7th of May 1871 on the Karak mountain].

**Syntype** 1♀ [not a male!] [box 62]: golden rounded label // *sabulosa* [handwritten by Radoszkowski] // 7. [printed] [pink label with red line] // Каракь [printed] // 118 [printed] // label with metasoma.

**Remarks.** The type is seriously damaged: it lacks the left antenna and the right flagellum, the mid- and hind-legs; the face is partially covered by glue; the prothorax is glued to the mesothorax; the metasoma is glued on a separate label.

In the description, Radoszkowski listed only three males, but the picture of the species (table II, picture 11) undoubtedly shows a female with an exserted ovipositor. Another syntype is found in MMU and it was considered as the holotype by Kimsey and Bohart (1991), it bears the following labels, 7. [pink label with red line] / Каракъ [printed] / *Chrysis sabulosa* Rad. <handwritten red label>. According to Kimsey and Bohart (1991) it belongs to the *C. sabulosa* group.

**Current status.** *Chrysis sabulosa* Radoszkowski, 1877.

### *Chrysis sarafschana* Mocsáry, 1889

Plate 36

*Chrysis* (*Tetrachrysis*) *sarafschana* Mocsáry 1889: 437.

**Type locality.** "Turkestania (vallis Sarafschan, Coll. Rad.)".

**Holotype** ♀ [box 61]: golden rounded label // Верхн. Заравш. // *ulianini* [handwritten by Radoszkowski] // 27. [printed] [pink label] // 52 [printed] // *sarafschana* Mocs. [handwritten by Mocsáry].

**Remarks.** The type is seriously damaged, without metasoma and some flagellomeres of antennae. This specimen is also the second syntype of *C. uljanini* Radoszkowski, 1877.

Mocsáry (1889) described *C. sarafschana* based on the female syntype of *C. uljanini* received by Radoszkowski. In his diagnosis, Mocsáry explained the reasons why *C. sarafschana* [belonging to the *C. ignita* group] cannot be the female of *C. uljanini* [belonging to the *C. cerastes* group]. This interpretation was later followed by other authors: Radoszkowki (1889: tab. 51, the drawing of the genital capsule is not related to the species belonging to the *C. ignita* group), Dalla Torre (1892: 92, 104), du Buys-

**Plate 36.** *Chrysis sarafschana* Mocsáry, 1889, holotype. **A** Head and mesosoma, dorsal view **B** head and mesosoma, dorsal view **C** head, frontal view.

son (in André) (1895: 506, 512), Bischoff (1910: 58, 61), Tsuneki (1953: 27) and Linsenmaier (1959: 159). For further remarks see under *C. uljanini* Radoszkowski and *C. uljanini* Radoszkowski & Mocsáry.

**Current status.** *Chrysis uljanini* Radoszkowski, 1877 (synonymized by Kimsey and Bohart 1991).

## *Chrysis saraksensis* Radoszkowski, 1891

*Chrysis saraksensis* Radoszkowski, 1891a: 195.

**Type locality.** "Saraks".

**Holotype** ♂ [box 61]: golden rounded label // Tr-Cap Saraks [printed] [yellow label with metasoma glued to it] // *Saraksensis* [handwritten by Radoszkowski].

**Remarks.** The type is in bad condition: it lacks the left flagellum, both fore wings, as well as mid- and hind-legs. The metasoma was found on the bottom of the box and glued on the locality label.

Radoszkowski emended the name *C. saraksensis* to *C. seraxensis* (Radoszkowski 1893b: 81), without any comment. The name *C. seraxensis* was later used by du Buysson ((in Andrè) 1896: 728), Bischoff (1913: 59) and Semenov-Tian-Shanskij and Nikol'skaya (1954: 128). The emendation is unjustified according to the Art. 32.5.1 of the Code: incorrect transliteration or latinization, or use of an inappropriate connecting vowel, are not to be considered inadvertent errors. The name *C. saraksensis* is the incorrect transliteration of a locality name written in Arabic. Kimsey and Bohart (1991: 428) placed *C. saraksensis* in synonymy with *C. kokandica* Radoszkowski in the *C. splendidula* group. Linsenmaier (1994: 197) revalidated *C. sarakensis* and placed it in the *C. cerastes* group. *C. saraxensis* belongs to the *C. cerastes* group and cannot be a synonym of *C. kokandica* Radoszkowski because it belongs to the *C. splendidula* group.

**Current status.** *Chrysis saraksensis* Radoszkowski, 1891.

### *Chrysis sardarica* Radoszkowski, 1890

*Chrysis sardarica* Radoszkowski 1890: 509.

**Type locality.** "Ararat, entre Sardar-Abadu et Sarabandy (13,000')" [given in the introduction].

**Holotype** ♂ [box 61]: golden rounded label // Ararat [printed] [yellow label] // *sardarica* R. [handwritten by Radoszkowski].

**Remarks.** The type is seriously damaged: it lacks the metasoma. Moreover, dermestid damage caused the loss of compound eyes, part of the occiput, left antenna, right flagellum, and both fore-legs. The specimen is pinned, and the pin has broken the mesothorax. It belongs to the *C. aestiva* group.

**Current status.** *Chrysis sardarica* Radoszkowski, 1890.

### *Chrysis semenovi* Radoszkowski, 1891

Plate 37

*Chrysis Semenovi* Radoszkowski 1891a: 193.

**Type locality.** "Saraks".

**Lectotype** ♀ [box 61]: golden rounded label // Tr-Cap Saraks [printed] [yellow label] // Semenovyi [handwritten by Radoszkowski] // Mus-PAN Krakow [handwritten by Dylewska] // **Lectotype** ♀ *Chrysis semenovi* Rad. R.M. Bohart [handwritten on red label].

**Paralectotypes** 2♀♀ [box 61]: Tr-Cap Saraks [printed] [yellow label] // Mus. PAN Krakow semenovi [handwritten by Dylewska] // **Paralectotype** ♀ *Chrysis semenovi* Rad. R.M. Bohart [handwritten on red label].

**Remarks.** Bohart (in Kimsey and Bohart 1991: 461) designated the lectotype and placed *Chrysis semenovi* in the *C. comparata-scutellaris* group. The three specimens labelled by Bohart were found under the label *C. semenovi* R. and belong to two different species. However, the two specimens considered as paralectotypes have not been labelled by Radoszkowski and do not match the original description. On the anterior surface, the colour of the first tergite is blue contrasting with the red colour of the remaining part of the segment. According to the original description "*Abdomen régulièrment scrobiculé feu-doré; premier segment tirant au jaune-doré, les deuxième et troisième plus rouges* [...]".

The specimen selected as lectotype belongs to the *cerastes* group and not to the *comparata-scutellaris* group. Radoszkowski himself added in his diagnosis: "Voisine de *Chr. incerta* Rad.". *C. semenovi* is very close to *C. annulata* Abeille de Perrin (in du Buysson), 1887, and the main characteristics which allows separation of the two species is the shape of the transversal frontal carina. In *C. annulata* there are two branches directed backwards on the vertex, while in *C. semenovi* the transversal frontal carina is simple, without branches on the vertex.

**Current status.** *Chrysis semenovi* Radoszkowski, 1891.

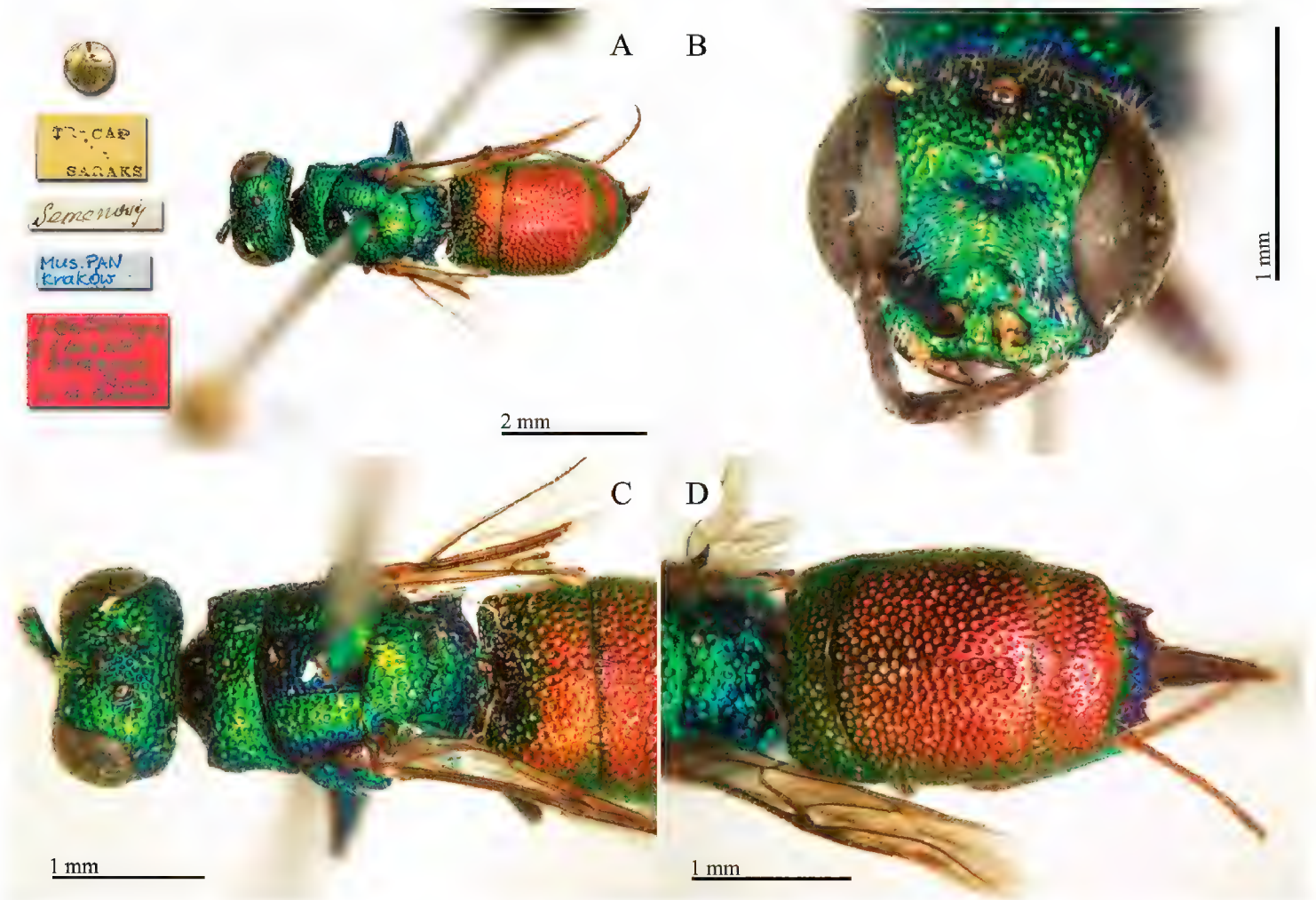



**Plate 37.** *Chrysis semenovi* Radoszkowski, 1891, lectotype. **A** Habitus, dorsal view **B** head, frontal view **C** head and mesosoma, dorsal view **D** metasoma, dorsal view.

### *Chrysis separanda* Mocsáry, 1889

*Chrysis* (*Olochrysis*) *separanda* Mocsáry (Inédite) (in Radoszkowski) 1889: 14.

**Type locality.** "Syra".

**Syntype** 1♂ [box 60]: golden rounded label // *separanda* Mocs [handwritten by Radoszkowski] // 51 [handwritten] // Syra [handwritten] // label with genital capsula.

**Syntype** 1♀ [box 60]: golden rounded label // Syra [handwritten] // *separanda* Mocs [handwritten by Radoszkowski] // *Chrysis varicornis* Spin ♀ Syra.

**Syntypes** 2♀♀ [box 60]: Syra [handwritten].

**Remarks.** *Chrysis separanda* belongs to the *C. radians* group.

**Current status.** *Chrysura varicornis* (Spinola, 1838) (synonymised and transferred by Kimsey and Bohart 1991: 497).

### *Chrysis serena* Radoszkowski, 1891

Plate 38

*Chrysis serena* Radoszkowski 1891a: 194.

**Type locality.** "Saraks".

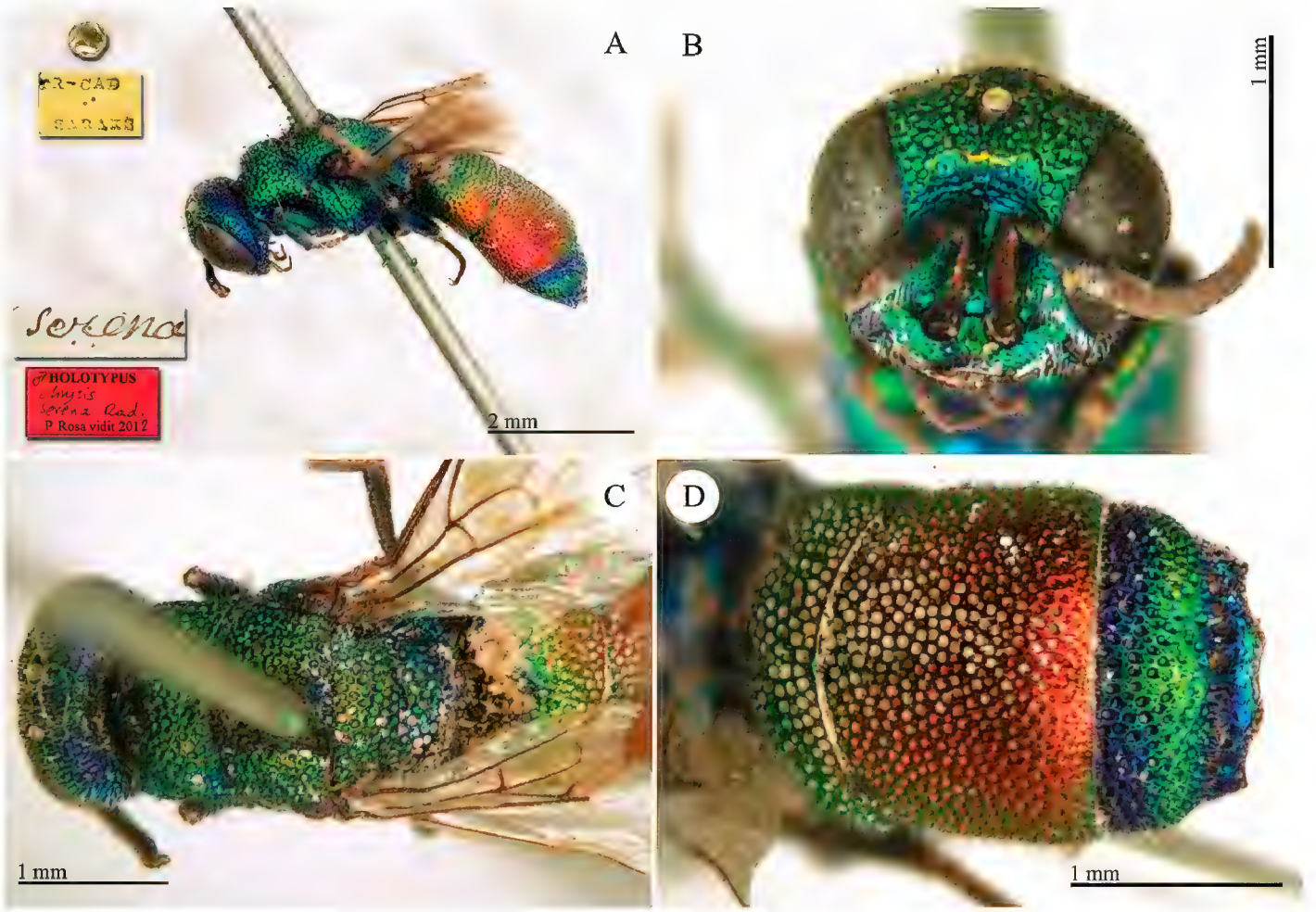



**Plate 38.** *Chrysis serena* Radoszkowski, 1891, holotype. **A** Habitus, lateral view **B** head, frontal view **C** mesosoma, dorsal view **D** metasoma, dorsal view.

**Holotype** ♂ [box 61]: golden rounded label // Tr-Cap Saraks [printed] [yellow label] // *serena* [handwritten by Radoszkowski].

**Remarks.** *Chrysis serena* belongs to the *C. viridula* group. The type lacks the right hind-leg, tarsi of the right mid-leg, as well as part of the right flagellum; fore wings are partially ripped.

**Current status.** *Chrysis serena* Radoszkowski, 1891.

### *Chrysis singula* Radoszkowski, 1891

Plate 39

*Chrysis singula* Radoszkowski 1891a: 187.

**Type locality.** "Ashabad".

**Syntype** 1♀ [box 61]: golden rounded label // yellow rounded label // Trans-Caspia [printed] [yellow label] // *singula* [handwritten by Radoszkowski].

**Syntypes** 2♀♀ [box 61]: yellow rounded label.

**Remarks.** Radoszkowski described this species based on a syntype series ("7-8 1/3 mill."). Nowadays in the collection there is only one specimen bearing the locality label and the handwritten label "*singula*" by Radoszkowski. In HNHM there is another female syntype labelled: Astrabad *singula* Rad. n.sp. <handwritten by both Radoszkowski and

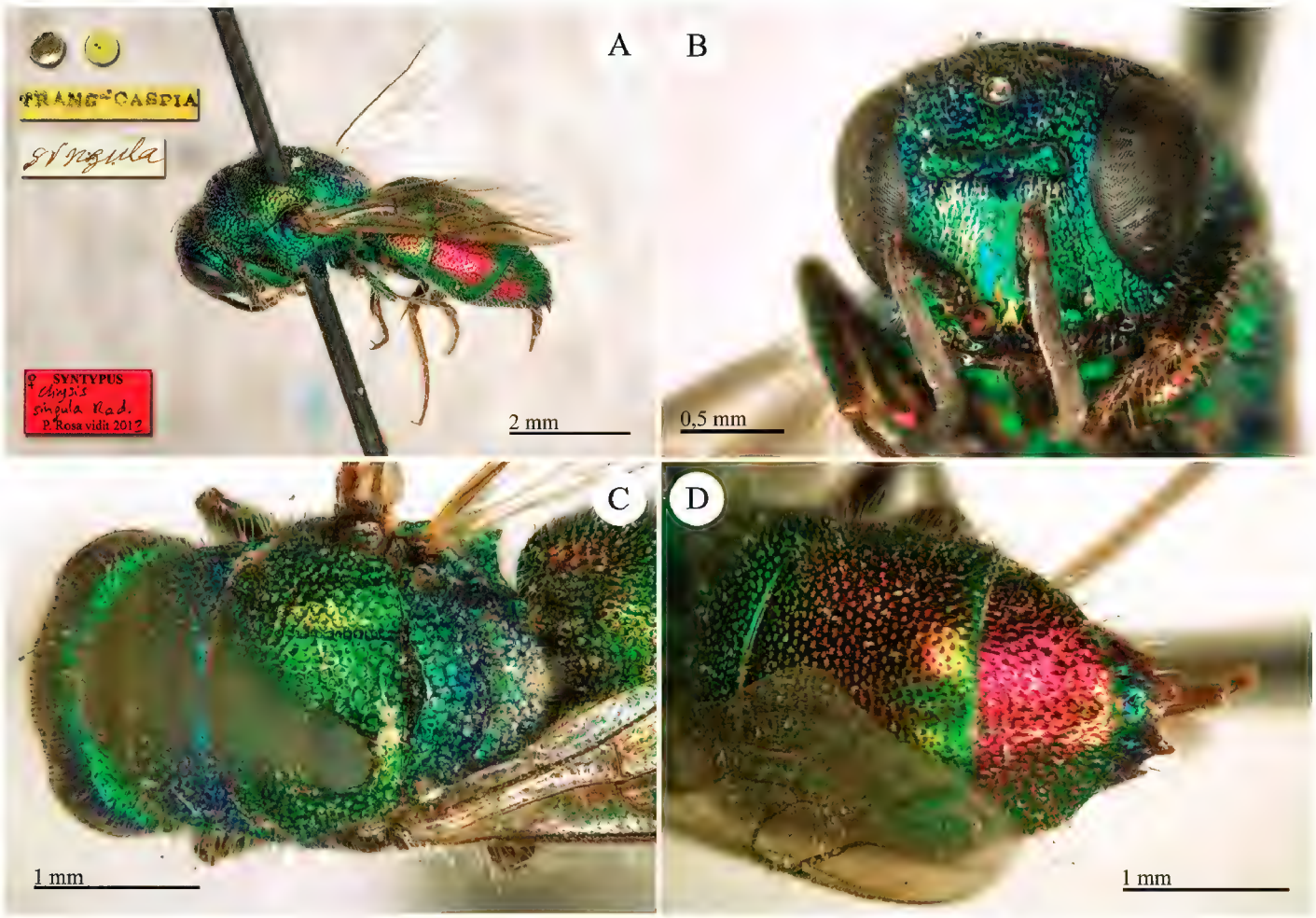



**Plate 39.** *Chrysis singula* Radoszkowski, 1891, syntype. **A** Habitus, dorso-lateral view **B** head, frontal view **C** mesosoma, dorsal view **D** second and third metasomal tergites, dorso-lateral view.

Mocsáry> / *Chrysis grohmanni* v. *singula* Rad. det. Mocsáry / id nr. 115604 HNHM Hym. coll. Another syntype is housed in MNHU and other two possible syntypes are deposited in MNHN (general collection box 54).

Linsenmaier (1959: 109; 1968: 62) used the name *Chrysis grohmanni* ssp. *bolivari* Mercet, 1902 (erroneously written *bolivieri*) for the specimens belonging to *C. singula* Radoszkowski; Linsenmaier clearly wrote that he did not know *C. singula* Radoszkowski. Kimsey and Bohart (1991: 416) included *C. singula* in the synonymic list of *C. grohmanni* Dahlbom. *Chrysis grohmanni grohmanni* Dahlbom is limited to the western Europe and North Africa (from Morocco to Tunisia). Various sister species (treated as subspecies by Linsenmaier) occur in eastern Europe, North Africa, Near East to central Asia. It belongs to the *C. succincta* group.

**Current status.** *Chrysis singula* Radoszkowski, 1891.

### *Chrysis spinidens* Mocsáry, 1887

Plate 40

*Chrysis* (*Tetrachrysis*) *spinidens* Mocsáry (inédite) Radoszkowski 1887: 48.

**Type locality.** "Zaïdam (Mongolia)".

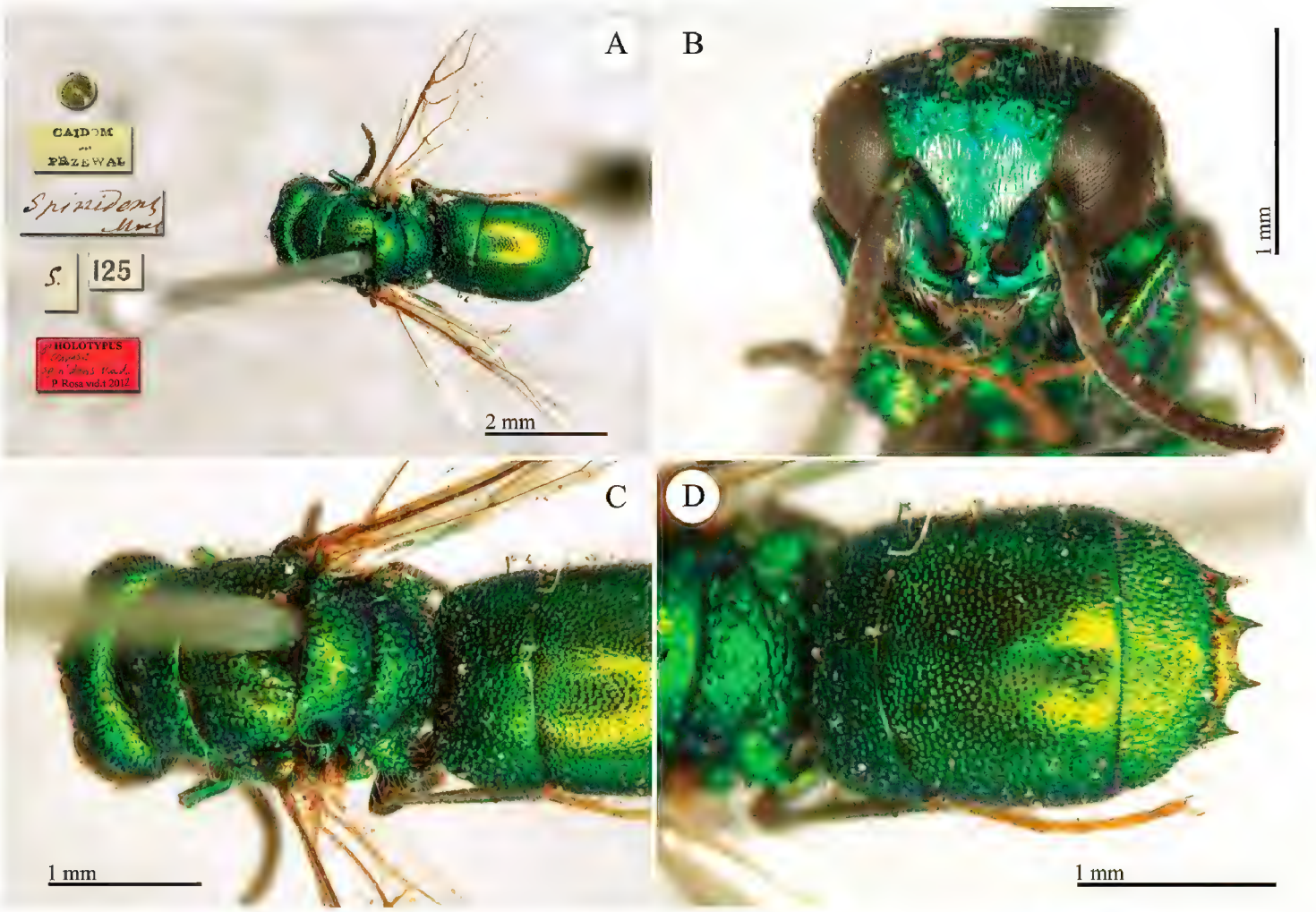



**Plate 40.** *Chrysis spinidens* Mocsáry, 1887, holotype. **A** Habitus, dorsal view **B** head, frontal view **C** mesosoma, dorsal view **D** metasoma, dorsal view.

**Holotype** ♂ [box 61]: golden rounded label // Caidom Przewal [printed] [yellow label] // spinidens Mocs [handwritten by Radoszkowski] // S [handwritten by Radoszkowski] // 125 [printed] 77.

**Remarks.** *Chrysis spinidens* belongs to the *C. ignita* group. It could be also synonymous with *Chrysis carnifex* Mocsáry, 1889 (V. Soon pers. comm.).

**Current status.** *Chrysis spinidens* Mocsáry, 1887.

### *Chrysis splendidula* var. *unica* Radoszkowski, 1891

*Chrysis splendidula* var. *unica* Radoszkowski 1891a: 189.

**Type locality.** "Ashabad".

**Syntype** 1♂ [box 61]: Trans-Caspia // var. *unica* [handwritten by Radoszkowski].

**Syntype** 1♂ [box 61]: Trans-Caspia // var. *unica* ♂ [handwritten by Radoszkowski] // label with genitalia.

**Syntype** 1♀ [box 61]: Trans-Caspia // *unica* ♀ [handwritten by Radoszkowski].

**Remarks.** As in other cases of species described in 1891 (e.g. *nova*, *simulatrix*), the specimens considered as syntypes bear the label "Trans-Caspia" and not "Ashabad". Another female syntype is housed in HNHM bearing the labels: Trans-Kaspia / *splen-*

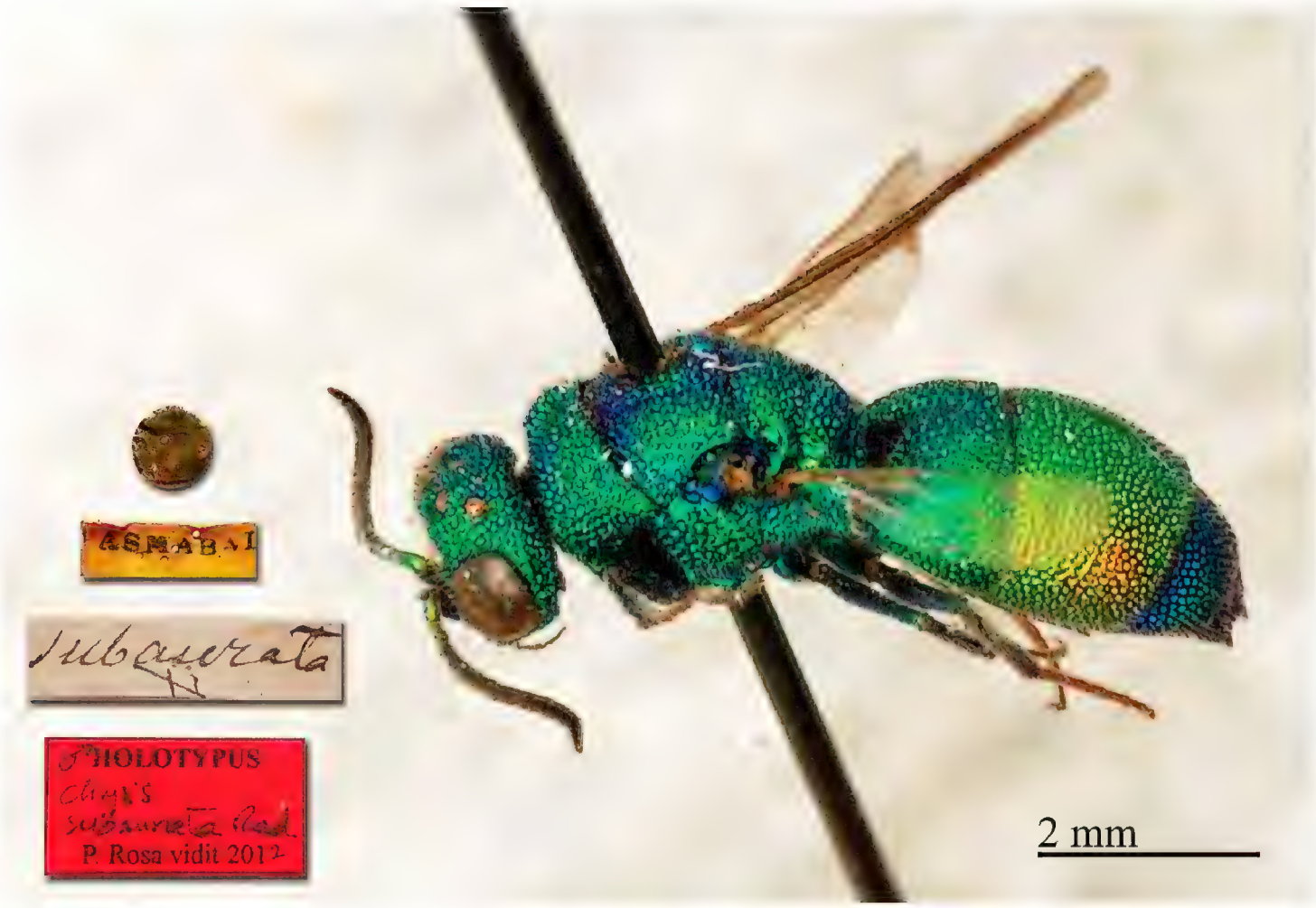



**Figure 7.** *Chrysis subaurata* Radoszkowski, 1891, holotype, habitus, dorso-lateral view.

*didula* var. *unica* <handwritten by Radoszkovski> / *Chrysis splendidula* v. *unica* Rad. det. Mocsáry / id nr. 115606 HNHM Hym. coll. These syntypes are closely related to *C. chlorisans* du Buysson (in André) by the colouration and sculpture of the body. It belongs to the *C. splendidula* group.

**Current status.** *Chrysis splendidula* Rossi, 1790 (synonymised by Kimsey and Bohart 1991: 465).

### ***Chrysis subaurata*** **Radoszkowski, 1891**

Figure 7

*Chrysis subaurata* Radoszkowski 1891a: 192.

**Type locality.** "Ashabad".

**Holotype** ♂ [box 61]: golden rounded label // Asmabad [printed, sic] [yellow label] //*subaurata* [handwritten by Radoszkowski].

**Remarks.** *Chrysis subaurata* is the green form of *C. splendidula* Rossi, 1790. It was considered as a variation of *C. splendidula* by du Buysson (in André) (1895: 534), Bischoff (1913: 60), Trautmann (1927: 170) and Linsenmaier (1951: 106). Kimsey and Bohart (1991) listed it as a valid species without type examination. It belongs to the *C. splendidula* group.

**Current status.** *Chrysis splendidula* Rossi, 1790 (synonymised by Linsenmaier 1951: 106).

### *Chrysis subcoerulea* Radoszkowski, 1891

*Chrysis subcoerulea* Radoszkowski 1891a: 191.

**Type locality.** "Ashabad".

**Possible Syntypes** 11♂♂♀♀ [box 61]: Tr-Cap Saraks.

**Remarks.** Under the name *Chrysis subcoerulea* R. there are eleven specimens collected at Saraks. One male was sent in loan [Mus-PAN Krakow] but it is the only specimen different from the others and not belonging to the current interpretation of the species. One female is labelled as *C. subcoerulea* by Radoszkowski and it bears a golden rounded label indicating a type specimen in the Radoszkowski collection. It is not easy to state whether they are truly syntypes, since the collecting locality is different: Saraks instead of Ashabad. As in other cases related to the same publication, it is possible that Ashabad is a locality in error: the two localities are close to each other and the great part of the specimens collected in Turkmenistan come from these two localities. In many other cases the localities given by Radoszkowski in 1891 did not match the locality labels found under the specimens. Another similar specimen is found in MNHN. *C. subcoerulea* is related with *C. viridissima* Klug, 1845 and belongs to the same species group. Kimsey and Bohart (1991: 467) placed *C. subcoerulea* in the *C. comparata s. str.* group, without type examination.

After the examination of the male type of *C. chlorochrysa* Mocsáry we propose the new synonym: *C. subcoerulea* Radoszkowski, 1891 = *C. chlorochrysa* Mocsáry, 1889. Du Buysson (1895: 500) already considered *C. subcoerula* as the female of *chlorochrysa*, but curiously without synonymizing it (*Obs. - Le female décrit par M. le général O. Radoszkowsky appartient à la* C. chlorochrysa *Mocs., d'après le spécimen que l'auteur a eu l'amabilité de m'envoyer.*).

**Current status.** *Chrysis chlorochrysa* Mocsáry, 1889.

### *Chrysis succincta* var. *sparsepunctata* du Buysson, 1895

Plate 41

*Chrysis succincta* var. *sparsepunctata* du Buysson (in André) 1895: 422.

**Type locality.** "Patrie: Province transcaspienne: Saraks (Radoszkowsky)".

**Holotype** ♀ [box 60]: Tr-Cap Saraks [printed] [yellow label] // *C. succincta* L. var. *sparsepunctata* Buyss. v. nov. [handwritten by du Buysson].

**Remarks.** This species belongs to the *C. succincta* group. It was placed in the synonymic list of *C. succincta* Linnaeus, 1767 by Kimsey and Bohart (1991) because it was

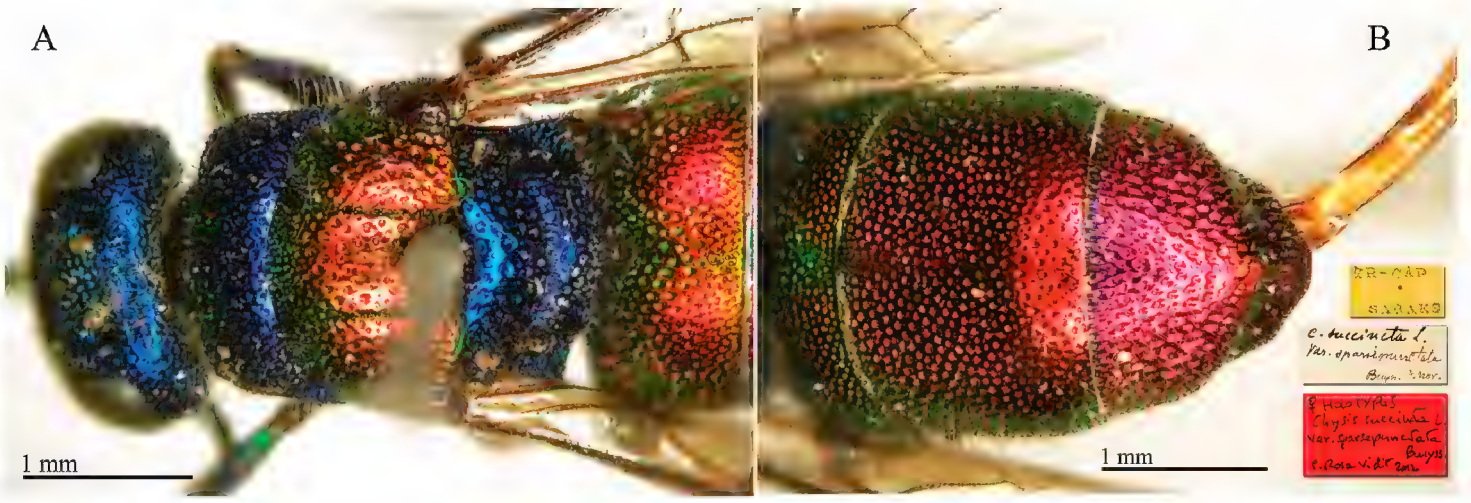



**Plate 41.** *Chrysis succincta* var. *sparsepunctata* du Buysson, 1892, holotype. **A** Head and mesosoma, dorsal view **B** metasoma, dorsal view.

described as one of its variations. The type of *C. frivaldszkyi* Mocsáry was checked. *C. frivaldszkyi* and relative species and subspecies are discussed in Rosa (2005) and Rosa and Xu (2015).

**Current status.** *Chrysis frivaldszkyi sparsepunctata* du Buysson (in André), 1895 (transferred by Linsenmaier 1959: 114).

## *Chrysis sznabli* Radoszkowski, 1891

*Chrysis Sznabli* Radoszkowski 1891a: 196.

**Type locality.** "Saraks".

**Holotype** ♂ [box 62]: golden rounded label // Tr-Cap Saraks [printed] [yellow label] // *sznabli* [handwritten by Radoszkowski].

**Remarks.** *Chrysis sznabli* belongs to the *C. viridula* group.

**Current status.** *Chrysis sznabli* Radoszkowski, 1891.

## *Chrysis taczanovskii* Radoszkowsky, 1877

Plate 42

*Chrysis Taczanovskii* Radoszkowsky 1877 (1876): 146.

**Type locality.** "Egypte et Abyssinie" [written in the introduction].

**Holotype** ♀ [box 62]: golden rounded label // Egyptus. [printed] [blue label] // Taczano [printed] // *Taczanovsk* [handwritten by Radoszkowski] // 220 [printed] // *taczanowski* [handwritten by Radoszkowski].

**Remarks.** The type is seriously damaged, without forewings and right hind wing; it has no left hind-leg and tarsi of the left mid-leg and right hind-legs; it lacks the sternites and the internal segments. The African form has shorter F-I and narrower scapal

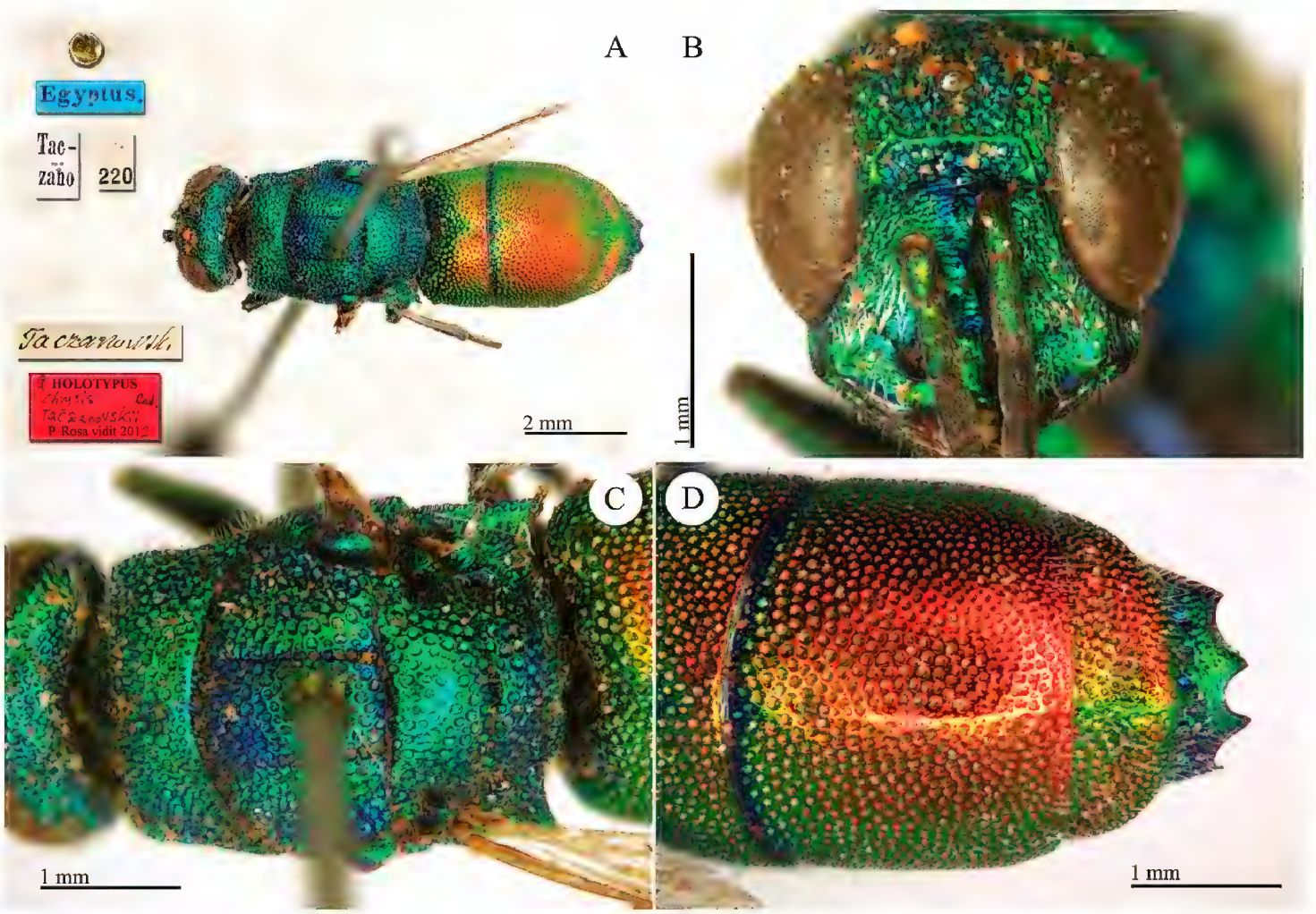



**Plate 42.** *Chrysis taczanovskii* Radoszkowsky, 1877, holotype. **A** Habitus, dorsal view **B** head, frontal view **C** mesosoma, dorsal view **D** metasoma, dorsal view.

basin compared with specimens from Middle East and Caucasian countries. It belongs to the *C. taczanovskii* group.

**Current status.** *Chrysis taczanovskii* Radoszkowsky, 1877.

### *Chrysis tasmanica* Mocsáry, 1889

*Chrysis* (*Hexachrysis*) *tasmanica* Mocsáry 1889: 563.

**Type locality.** "Tasmania (Coll. Rad.)".

**Holotype** ♂ [box 62]: golden rounded label // 137 [printed] // Tasman. [printed] // *tasmanica* Mocs [handwritten by Radoszkowski].

**Remarks.** *Chrysis tasmanica* belongs to the *C. smaragdula* group.

**Current status.** *Chrysis tasmanica* Mocsáry, 1889.

### *Chrysis taurica* Mocsáry, 1889

Plate 43

*Chrysis* (*Tetrachrysis*) *taurica* Mocsáry 1889: 345.

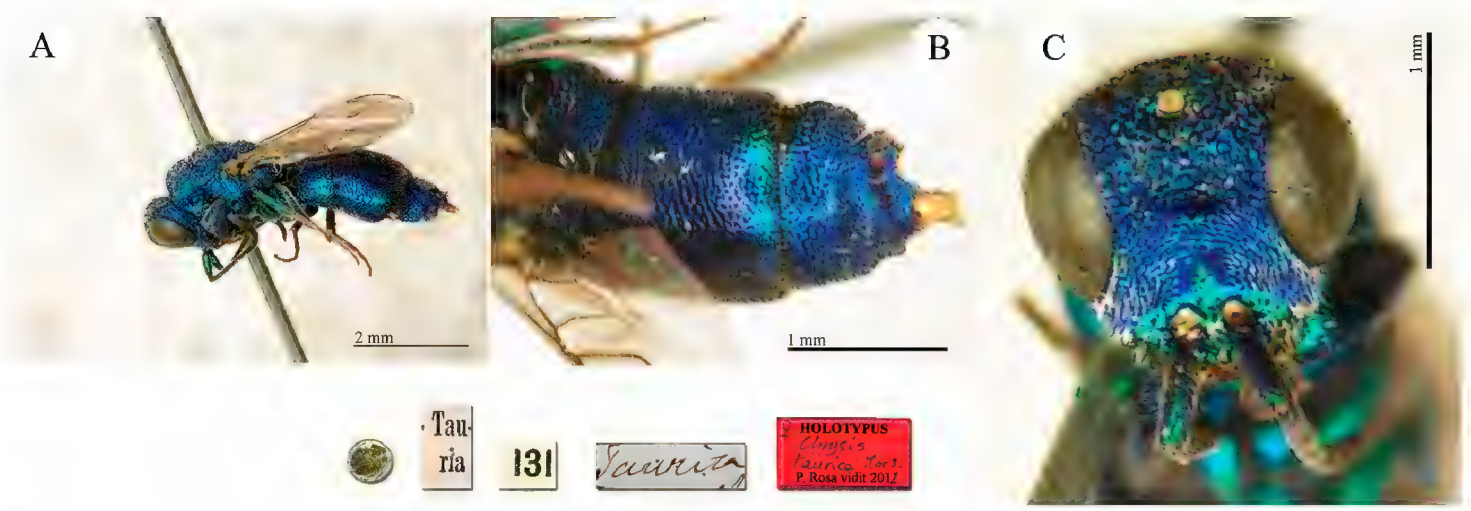



**Plate 43.** *Chrysis taurica* Mocsáry, 1889, holotype. **A** Habitus, lateral view **B** metasoma, dorso-lateral view **C** head, frontal view.

**Type locality.** "Patria: Tauria [Krim] (Coll. Rad.)".

**Holotype** ♀ [box 62]: golden rounded label // Tauria [printed] // *taurica* [handwritten by Radoszkowski] // 131 [printed].

**Remarks.** *Chrysis taurica* belongs to the *C. varidens-ragusae* group.

**Current status.** *Chrysis ragusae* De Stefani, 1888 (synonymised by Trautmann 1927: 143).

### *Chrysis tenella* Mocsáry, 1889

Plate 44

*Chrysis* (*Olochrysis*) *tenella* Mocsáry 1889: 197.

**Type locality.** "Caucasus (Coll. Rad.)".

**Holotype** ♂ [not ♀] [box 60]: Caucasus [printed] // ~~*unicolor*~~ ? [handwritten by Radoszkowski] // 273 [handwritten by Mocsáry] // *tenella* Moc [handwritten by Radoszkowski].

**Remarks.** The type lacks two segments of the left antenna, right wings, tibia and tarsi of the left fore-leg as well as tarsi of the right hind-leg. It is closely related to *C. chalcophana* Mocsáry; the main difference is found only in the third tergite, particularly in the shape of the pit-row. It belongs to the *C. millenaris* group.

**Current status.** *Chrysis tenella* Mocsáry, 1889.

### *Chrysis therates* Mocsáry, 1889

Plate 45

*Chrysis* (*Hexachrysis*) *therates* Mocsáry 1889: 555.

**Type locality.** "Senegalia (Coll. Rad.)".

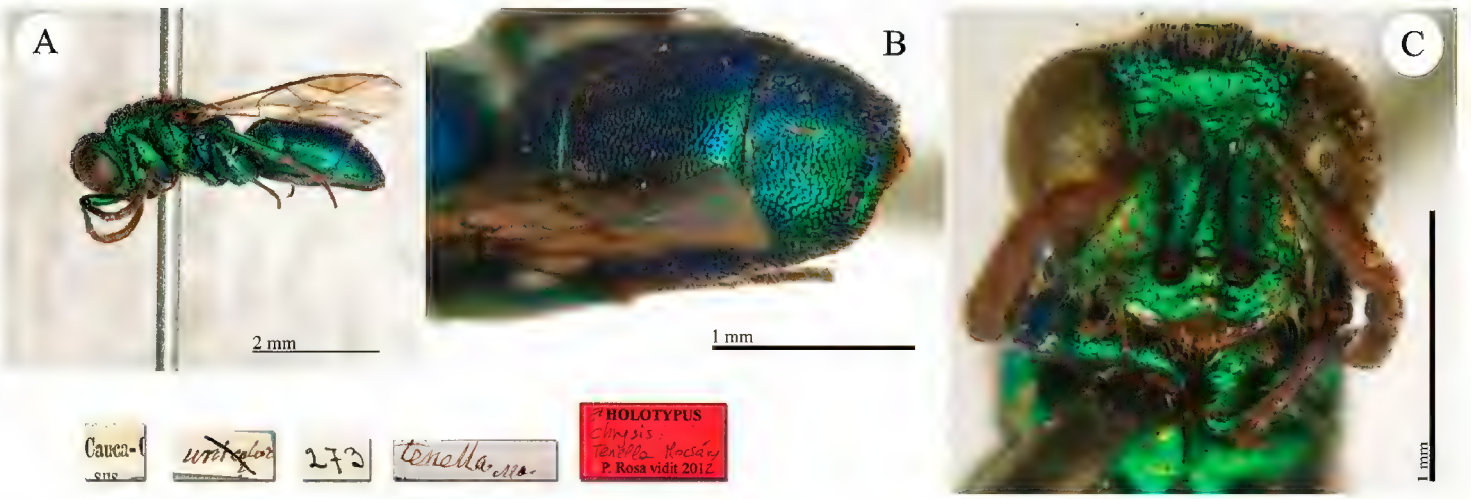



**Plate 44.** *Chrysis tenella* Mocsáry, 1889, holotype. **A** Habitus, lateral view **B** metasoma, dorso-lateral view **C** head, frontal view.

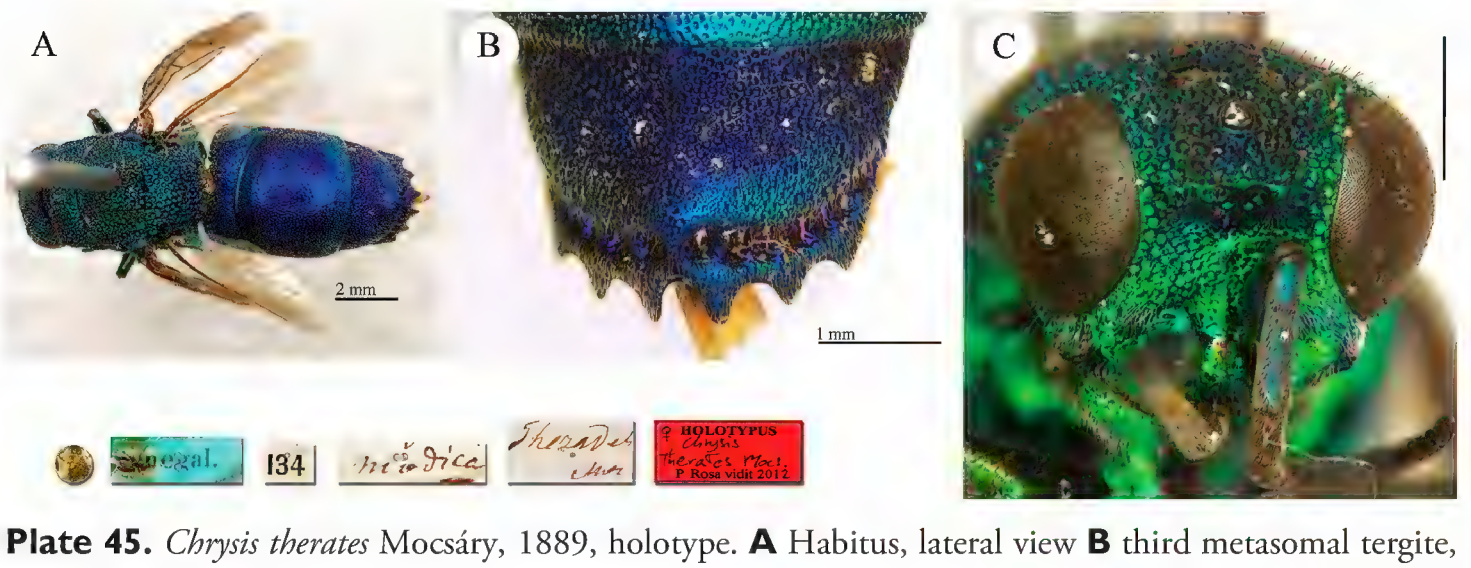



**Plate 45.** *Chrysis therates* Mocsáry, 1889, holotype. **A** Habitus, lateral view **B** third metasomal tergite, dorsal view **C** head, frontal view.

**Holotype** ♀ [box 62]: golden rounded label // Senegal. [printed] [green label] // 134 [printed] // *modica* [handwritten by Radoszkowski] // *therates* Moc [handwritten by Radoszkowski].

**Remarks.** Kimsey and Bohart (1991: 438) synonymised *Chrysis therates* with *C. mediocris* Dahlbom, 1845 without type examination. *C. therates* is cleary separated from *C. mediocris* even though it belongs to the *C. smaragdula* group. The type perfectly matches Mocsáry's description, but this specimen seems to be collected in another biogeographical region. Shape and colour pattern are typical of the Oriental Region. We identify this species as *Chrysis principalis* Smith. We did not examined the type of *C. principalis* yet, however this specimen matches all the specimens of *C. principalis* observed in different collections, including those in Linsenmaier's collection, who examined Smith types (pers. comm. based on unpublished manuscripts found in NML). Very likely, Mocsáry described *C. therates* as a new species because bearing the label "Senegal", and no other African species shares similar characteristics. The locality label of *C. therates* could be in error or this specimen could be accidentally introduced into Senegal by commerce. In fact, Senegal was on the commercial way from South Asia to Europe, and the specimen

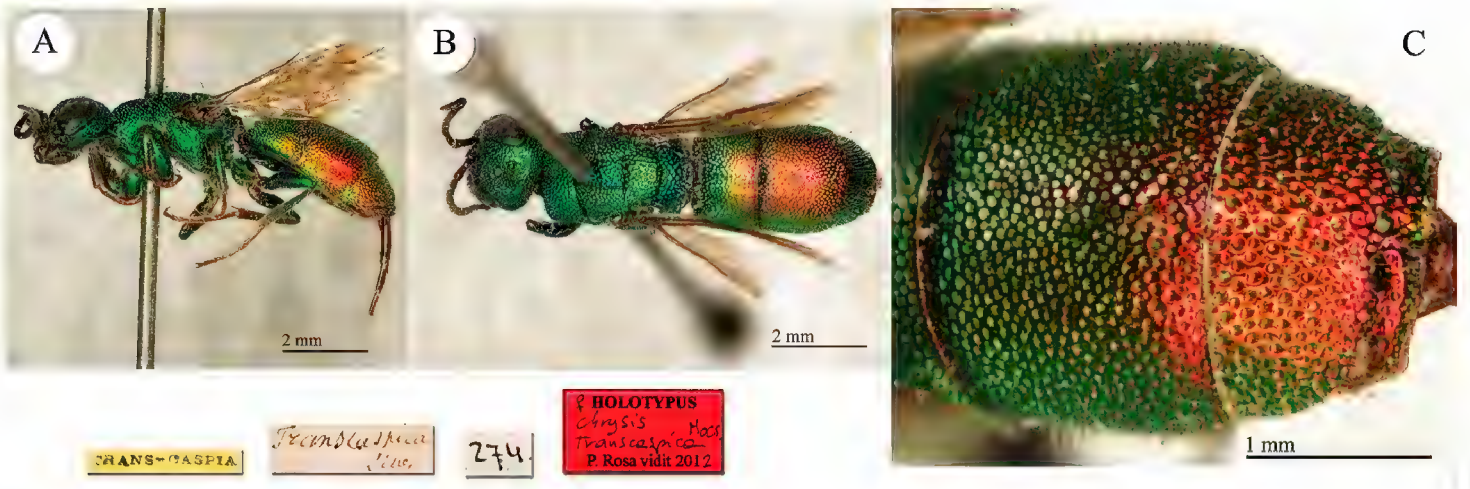



**Plate 46.** *Chrysis transcaspica* Mocsáry, 1889, holotype. **A** Habitus, lateral view **B** habitus, dorsal view **C** metasoma, second and third metasomal tergites, dorsal view.

could be present on any ship along this route. Therefore, we propose the new synonym: *C. therates* Mocsáry, 1889 = *C. principalis* Smith, 1874.

**Current status.** *Chrysis principalis* Smith, 1874.

## *Chrysis tolteca* Mocsáry, 1889

*Chrysis* (*Tetrachrysis*) *tolteca* Mocsáry 1889: 341.

**Type locality.** "Patria: Mexico (Coll. Rad.)".

**Holotype** ♀ [box 62]: golden rounded label // Mexico. [printed] [green label] // *Toldeca* [handwritten by Radoszkowski] // 138 [printed].

**Current status.** *Exochrysis tolteca* (Mocsáry, 1889) (transferred by Kimsey and Bohart 1991: 503).

## *Chrysis transcaspica* Mocsáry, 1889

Plate 46

*Chrysis* (*Gonochrysis*) *transcaspica* Mocsáry 1889: 306.

**Type locality.** "Patria: Territorium transcaspicum (Coll. Rad.)".

**Holotype** ♀ [box 60]: Trans-Caspia [printed] [yellow label] // *transcaspica* Moc [handwritten by Radoszkowski] // 274 [handwritten by Mocsáry].

**Remarks.** In Kimsey and Bohart (1991: 407), *Chrysis transcaspica* was placed in synonymy with *C. elegans* Brullé, 1833. Rosa et al. (2013: 32) revalidated the species based on the different shape of the anal teeth, colour and punctuation. It belongs to the *C. elegans* group.

**Current status.** *Chrysis transcaspica* Mocsáry, 1889.

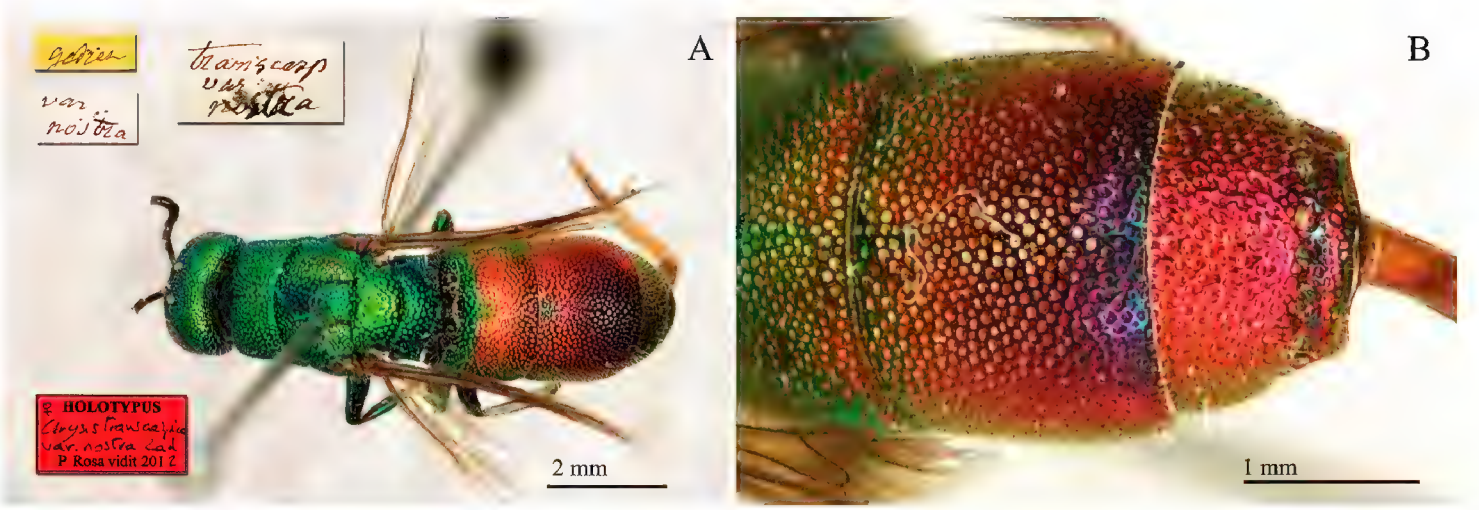



**Plate 47.** *Chrysis transcaspica* var. *nostra* Radoszkowski, 1891, holotype **A** habitus, dorsal view **B** metasoma, dorsal view.

### *Chrysis transcaspica* var. *nostra* Radoszkowski, 1891

Plate 47

*Chrysis transcaspica* var. *nostra* Radoszkowski 1891a: 184.

**Type locality.** "Gedzen".

**Holotype** ♀ [box 60]: Gedzen [handwritten] [yellow label] // var *nostra* [handwritten by Radoszkowski] // *transcaspica* var *nostra* [handwritten by Radoszkowski].

**Remarks.** *Chrysis transcaspica* var. *nostra* was described by Radoszkowski (1891) mainly based on colours: "*Premier article des antennes cuivré; premier segment abdominal feu-doré, deuxième et troisième d'un rouge carminé.*". Kimsey and Bohart (1991: 407) synonymised *C. transcaspica* Mocsáry, 1889 and *C. transcaspica* var. *nostra* with *C. elegans* Lepeletier, 1806. It belongs to the *C. elegans* group.

**Current status.** *Chrysis transcaspica* Mocsáry, 1889.

### *Chrysis trisinuata* Mocsáry, 1889

Plate 48

*Chrysis* (*Gonochrysis*) *trisinuata* Mocsáry 1889: 288.

**Type locality.** "Patria: Turkestania (Taschkend, Coll. Rad.)".

**Holotype** ♀ [box 60]: golden rounded label // Tachkend [printed] // 117 [printed] // [unreadeable] [handwritten] // *trisinuata* Moc. [handwritten by Radoszkowski].

**Remarks.** The taxonomic position of this species is not clear. The very short malar space (less than 1 MOD); feeble transverse frontal carina joined to the upper margin of the scapal basin; micropunctuated scapal basin; prolonged and teethless anal margin suggest that *C. trisinuata* could belong to the genus *Chrysidea* Bischoff. However the

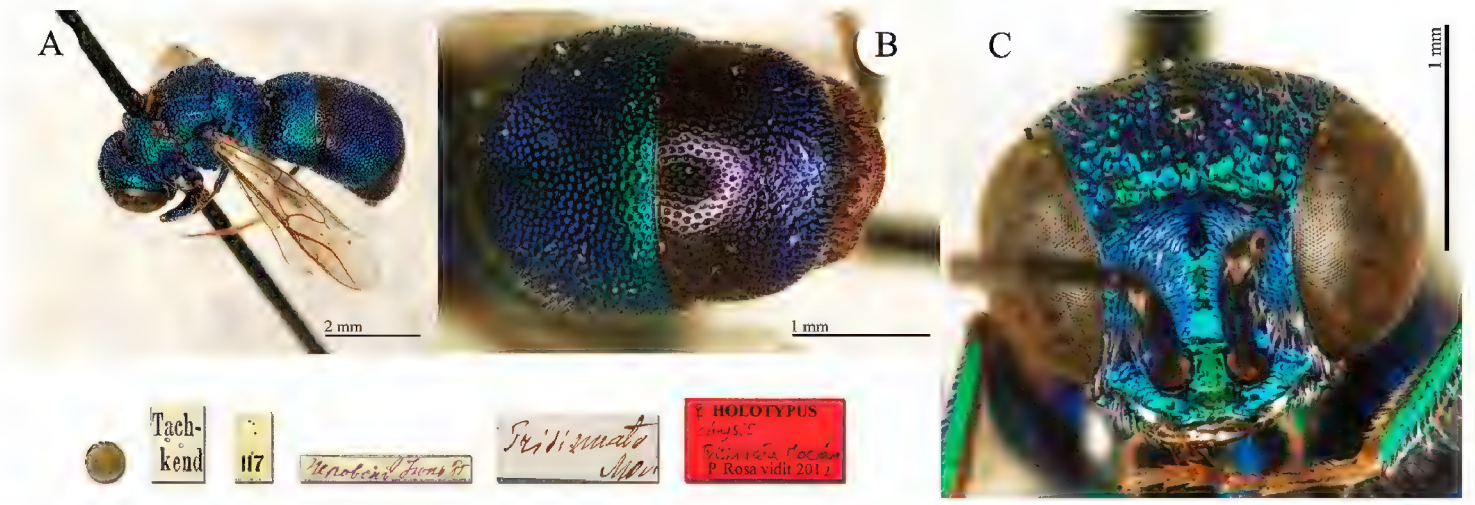



**Plate 48.** *Chrysis trisinuata* Mocsáry, 1889, holotype. **A** Habitus, dorso-lateral view **B** second and third metasomal tergites, dorsal view **C** head, frontal view.

general habitus, large dimensions (about 7 mm) and the complete closed cells on the wings place it in the genus *Chrysis* Linnaeus.

**Current status.** *Chrysis trisinuata* Mocsáry, 1889.

## *Chrysis uljanini* Radoszkowski, 1877

Plate 49

*Chrysis Uljanini* Radoszkowski 1877: 22.

**Type locality.** "Habitat in valle Sarafschan et in desertis prope Taschkent", "Видъ этотъ пойманъ 19 и 27 мая 1869 г. въ Заравшанской долинѣ, 19 мая 1871 г. въ степи между Сыръ-дарьей и Ташкентомъ" [This species was collected on the 19th and 27th of May 1869 in the Zaravshan Valley and the 19th May 1871 in steppe between Syr-Darya and Tashkent].

**Paralectotype** 1♂ [box 62]: golden rounded label // Степь м. С. д. и Т. [printed] // 19. [printed] [pink label with red line].

**Paralectotype** 1♀ [box 61]: golden rounded label // Верхн. Заравш. // *ulianini* [handwritten by Radoszkowski] // 27. [printed] [pink label] // 52 [printed] // *saraf-schana* Mocs. [handwritten by Mocsáry].

**Remarks.** Bohart (in Kimsey and Bohart 1991: 473) designated the lectotype at MMU. In Radoszkowski's collection, under the name *Uljanini* R. there are three male specimens belonging to the *C. cerastes* group, with very short F-I and F-II: one male paralectotype of *C. uljanini*, and other two specimens with the same particular colour and thoracic punctuation. The first specimen is the syntype (currently paralectotype) listed by Radoszkowski as: Степь м. С. д. и Т. [printed] // 19. [= 19 мая 1871 г. въ степи между Сыръ-Дарьей и Ташкентомъ" in the Russian description]. The other two specimens were collected at: "Iskender [Iskenderund?] 20.jul.1870" and "Kizilkum 30 Aug 1870" and they cannot be considered as paralectotypes of *C. uljanini*. The specimen collected at

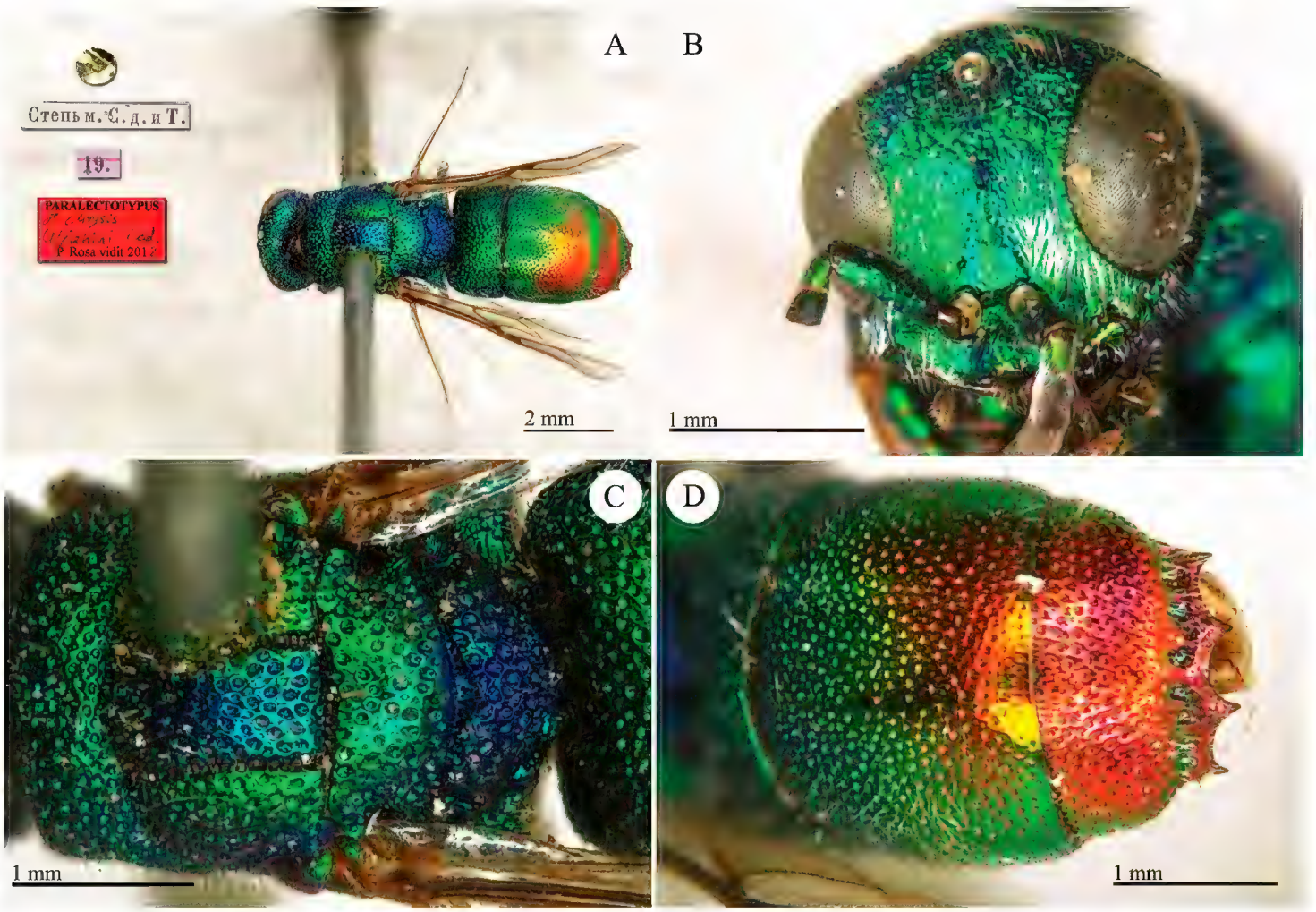



**Plate 49.** *Chrysis uljanini* Radoszkowski, 1877, paralectotype. **A** Habitus, dorsal view **B** head, frontal view **C** mesosoma, dorsal view **D** second and third metasomal tergites, dorsal view.

Kizilkum was dissected by Radoszkowski, who drew the genitalia in his revision (1889: tab.IV, fig. 51). For further remarks see under *C. uljanini* Radoszkowski & Mocsáry and *C. sarafschana* Mocsáry. The second paralectotype is the female selected by Mocsáry as the holotype of *C. sarafschana* Mocsáry, 1889. It belongs to the *C. ignita* group.

**Current status.** *Chrysis uljanini* Radoszkowski, 1877.

### *Chrysis uljanini* Radoszkowski & Mocsáry, 1889

*Chrysis Uljanini* Radoszkowski and Mocsáry 1889: 436 *nec* Radoszkowski, 1877.

**Type locality.** "Turkestania (Kisil-kum. Coll. Rad.)".

**Holotype** ♂ [box 62]: Kizilkum 30 Aug 1870 / label with genitalia / *Uljanini* Rad. Mocs / *Chrysis kizilkumiana* Rosa det. P. Rosa 2012

**Remarks.** Mocsáry (1889) studied two specimens of *Chrysis uljanini* lent by Radoszkowski. The female was the syntype collected at Zaravshan on the 27th May 1896, while the male was erroneously considered as syntype. In fact, the male specimen was collected at Kizilkum on the 30th of August 1870 and was not listed in the original description by Radoszkowki (1877), therefore it cannot be considered as a syntype. Radoszkowki (1889: fig. 51) drew the genitalia of this specimen in the revision of the

genial capsulae of the Chrysididae. The male belongs to a different species and is conspecific with the male paralectotype of *C. uljanini* Radoszkowki collected at Tashkent and housed in ISEA-PAN.

Mocsáry (1889) understood that the two specimens of *C. uljanini* belong to two different species: *Clariss.*[imo] *Auctor* [Radoszkowski] *sub nomine* Chrys. Uljanini, *secundum specimina typica, duas descripserat species bene distinctas et ego denominationem solum ad marem, etiam depictum, restringo et feminam distinguendae esse censeo* [based on the type specimens, Radoszkowski described two well distinct species under the name *Chrysis Uljanini* and I limit this name only to the male, also depicted, and the female has to be separate].

Therefore Mocsáry (1889) considered the male from Kizilkum as *C. uljanini*, but redescribed it under the name *C. uljanini* Radoszkowski & Mocsáry. He also described the female syntype of *C. uljanini* as *C. sarafashana* Mocsáry (1889).

The following authors followed Mocsáry's (1889) interpretation and considered *C. uljanini* in the *C. cerastes* group (*sensu* Linsenmaier 1959) and *C. sarafashana* in the *C. ignita* group (Radoszkowki 1891: 190): Dalla Torre (1892: 92, 104), du Buysson (in André) (1895: 506, 512), Bischoff (1913: 58, 61), Tsuneki (1953: 27), Linsenmaier (1959: 159). The same identifications can be found in the most important European collections of Linsenmaier (NMLS), Zimmermann (NHMW) and Semenov-Tian-Shanskij (ZIN). Only Nikol'skaja (in Semenov-Tian-Shanskij and Nikol'skaya 1954: 130) gave the name *C. uljanini* to specimens belonging to the *C. ignita* group.

At the beginning of 1990 the situation was clear: there were two species (*C. uljanini* and *C. sarafashana*) belonging to two different species groups (*C. cerastes* and *C. ignita* groups), but the lectotype of *C. uljanini* should be still designated, based on the male syntype, housed in Krakow and collected at Tashkent, to fix the current interpretation of the two species.

Bohart (in Kimsey and Bohart 1991) designated one female syntype found in MMU and belonging to the *C. ignita* group as the lectotype of *C. uljanini*. Thus, the name *C. sarafashana* fallen in synonymy with *C. uljanini* and the males belonging to the *C. cerastes* group, till then known as *C. uljanini*, remained without any name.

To clarify the situation, we consider the name *C. uljanini* Radoszkowski & Mocsáry, 1889 as a junior primary homonym of *C. uljanini* Radoszkwski, 1877. In fact, Mocsáry did not study nor redescribe the syntype male of *C. uljanini*, but a different specimen collected at Kizilkum. The evidence of the description of a new species can be found in Mocsáry's text (1889: 436) and in the index (1889: 633): Mocsáry considered this taxon as *C. uljanini* Radoszkowki & Mocsáry, 1889 and not as *C. uljanini* Radoszkowki, 1877. This is the only case in which Mocsáry added his name after the original author name. Therefore all the citations of *C. uljanini* published from 1889 until Kimsey and Bohart's monograph (1991) (excluding Semenov-Tian-Shanskij and Nikol'skaja 1954) should be referred to this taxon.

Since *C. uljanini* Radoszkowski & Mocsáry, 1889 has to be considered as a primary homonym of *C. uljanini* Radoszkowki, 1877, we replace it with *C. kizilkumiana* Rosa, **new name**. The etymology of this name refers to the collecting place. The holotype of

this species is the male studied by Mocsáry and bearing the following labels: "Kizilkum 30 Aug 1870" and "*Uljanini* Rad. Mocs" [handwritten by Mocsáry]. The accurate description of this taxon is given by Mocsáry (1889: 436) and the drawing of the genital capsule is given by Radoszkowki (1889: tab. IV, fig. 51). The type is conspecific with the paralectotype male of *C. uljanini* Radoszkowski, whose figures can be found in this article (Plate 49). It belongs to the *C. cerastes* group.

**Current status.** *Chrysis kizilkumiana* Rosa, replacement name for *C. uljanini* Radoszkowski & Mocsáry, 1889 *nec* Radoszkowski, 1877.

### *Chrysis vagans* Radoszkowski, 1877

Plate 50

*Chrysis vagans* Radoszkowski 1877: 11.

**Type locality.** "Habitat in valle Sarafschan et in monte Karak", "Пойманъ 13 мая 1869 г. въ Джамскомъ ущельи и 6 мая 1871 г. на горѣ Каракъ" [collected on the 13th of May 1869 in the Canyon Djamsk, and on the 6th of May 1871 on the Karak mountain].

**Lectotype** (here designated) 1♂ [not ♀] [box 60]: golden rounded label // Каракъ [printed] // *vagans* [handwritten by Radoszkowski] // Spinthr. [handwritten by Radoszkowski] // 6 [pink label with red line] // 46 [printed].

**Remarks.** One male paralectotype is housed in MMU (Kimsey and Bohart 1991: 558). *Chrysis vagans* is the type species of the genus *Spintharina* Semenow. We here designate the lectotype on the specimen housed in ISEA-PAN because the specimen in the Fedtschenko collection in MMU does not belong to the same species. The latter belongs to a similar species with different face in frontal view, without distinct TFC and characteristic antero-basal lobe on the third tergite. It belongs to the *S. vagans* group.

**Current status.** *Spintharina vagans* (Radoszkowski, 1877) (transferred by Bohart 1987: 93).

### *Chrysis viridans* Radoszkowski, 1891

Plate 51

*Chrysis viridans* Radoszkowski 1891a: 192.

**Type locality.** "Ashabad".

**Holotype** ♀ [box 62]: golden rounded label // Ashabad [printed] [yellow label] // *viridicans* [sic! handwritten by Radoszkowski].

**Remarks.** Kimsey and Bohart (1991: 396) synonymised *Chrysis viridans* with *C. chrysochlora* Mocsáry, 1889. In this paper we place *C. chrysochlora* in synonymy

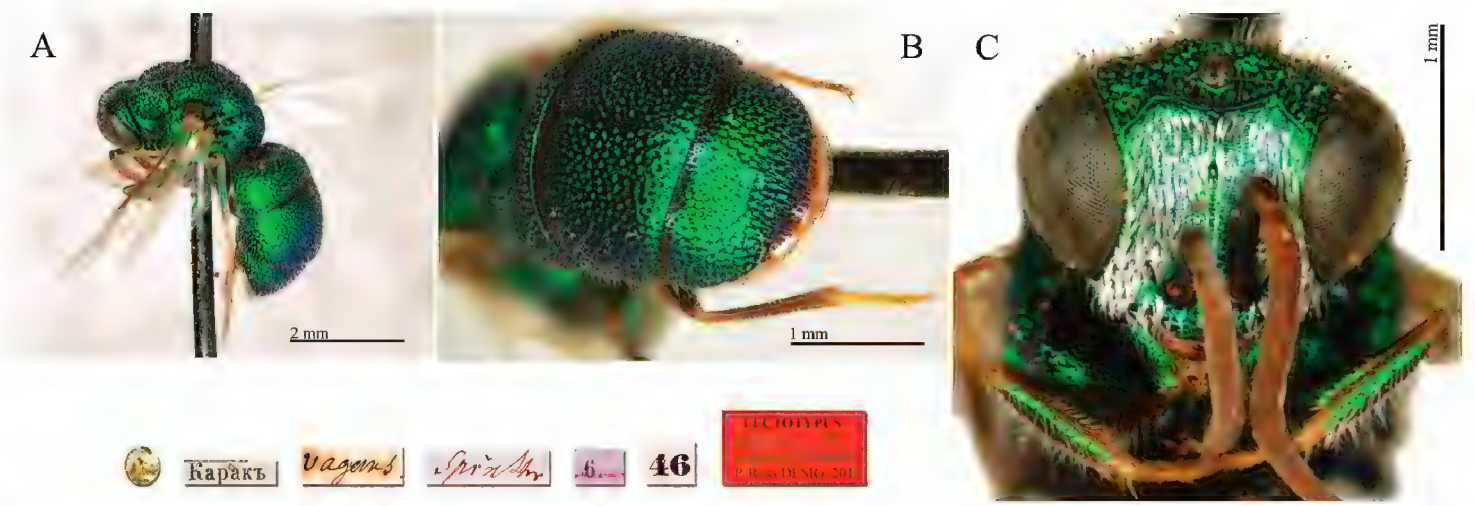



**Plate 50.** *Chrysis vagans* Radoszkowski, 1877, lectotype. **A** Habitus, dorso-lateral view **B** second and third metasomal tergites, dorsal view **C** head, frontal view.

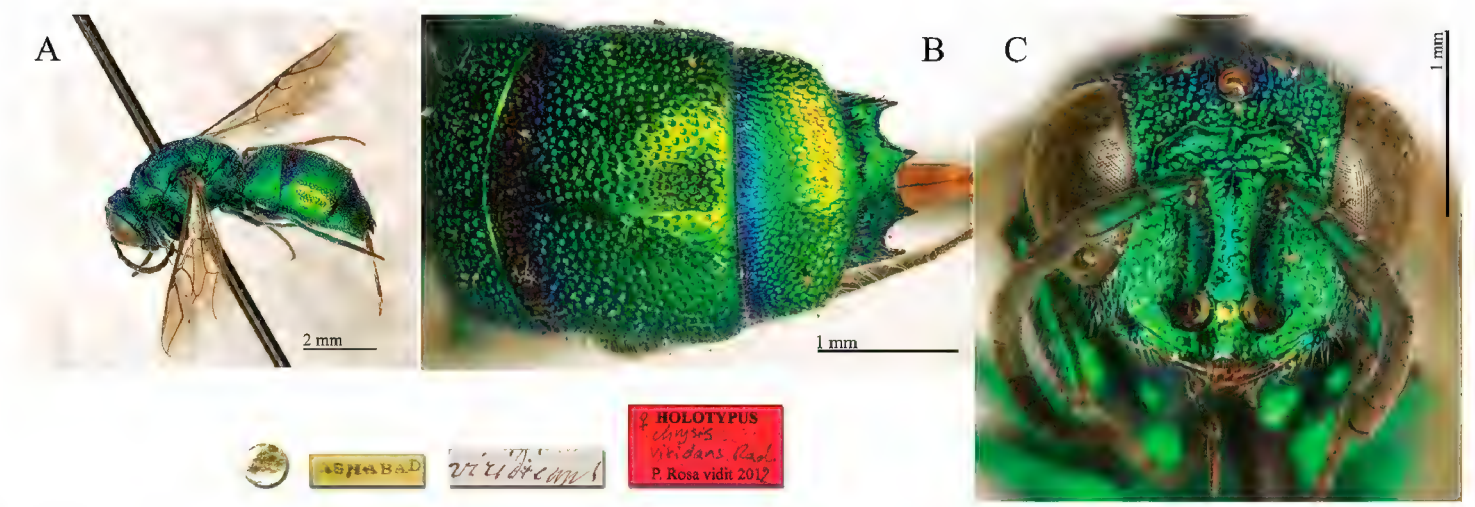



**Plate 51.** *Chrysis viridans* Radoszkowski, 1891, holotype. **A** Habitus, dorso-lateral view **B** second and third metasomal tergites, dorsal view **C** head, frontal view.

with *C. keriensis*. Therefore, *C. viridans* can be considered as a synonym of *C. keriensis*. Another specimen identified by Radoszkowski is housed in MNHN (general collection box 41). It belongs to the *C. ignita* group.

**Current status.** *Chrysis keriensis* Radoszkowski, 1887.

### *Cleptes morawitzi* Radoszkowski, 1877

Plate 52

*Cleptes Morawitzi* Radoszkowski 1877: 1.

**Type locality.** "Habitat prope Maracandam, Taschkent et Tschardara", "Пойманъ 5, 12, 13 и 19 апрѣля 1869 г. въ Самаркандѣ; 3, 5, 8 и 25 апрѣля 1871 г. въ Ташкентѣ и Чарджарѣ" [collected on the 5th, 12th, 13th and 19th of April 1869 at Samarkand; on the 3rd, 5th, 8th and 25th of April 1871 at Tashkent and Tschardara].

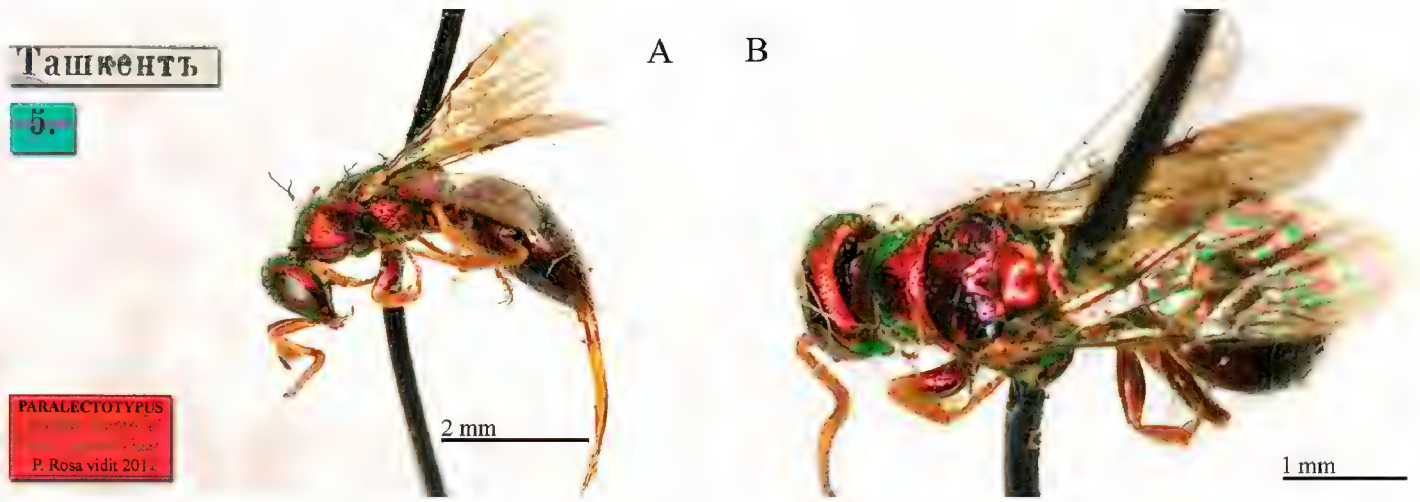



**Plate 52.** *Cleptes morawitzi* Radoszkowski, 1877, paralectotype. **A** Habitus, lateral view **B** habitus, dorsal view.

**Paralectotype** 1♀ [box 59]: 3 [green label with red line] // Taschkent [printed in cyrillic].

**Paralectotype** 1♀ [box 59]: 5 [green label with red line] // Taschkent [printed in cyrillic].

**Paralectotype** 1♂ [box 59]: 8 [green label with red line] // label with genitalia // Taschkent [printed in cyrillic].

**Remarks.** Móczár (1997: 39) designated the lectotype of *Cleptes morawitzi* in MNHU. Three paralectotypes are housed in Kraków. The male bears a label with only part of the dissected genitalia. Radoszkowski (1889: 6, tab. I) delineated it in his revision on the genital capsules of the Chrysididae (fig. 4a, 4b, 4c). In the description, Radoszkowski did not mention the number of specimens examined, but in the type series there were males and females, and the number of specimens examined was not less than eight (comparing the dates of collection), thus we consider the specimens in the Kraków collection as paralectotypes. They match the original description and the lectotype in MNHU. Five paralectotypes are also housed in Fedtschenko's collection in MMU, one paralectotype is deposited in MSNG (Rosa 2009).

**Current status.** *Cleptes morawitzi* Radoszkowski, 1877.

### *Cleptes radoszkowskii* Mocsáry, 1889

Plate 53

*Cleptes Radoszkowskii* Mocsáry (Inédite) (in Radoszkowski) 1889: 7.

**Type locality.** "Caucase (Mlokosewitz)".

**Lectotype** ♀ [box 59]: Caucas Nlokos [printed, sic!] // Lectotypus [printed] Clept. ♀ *radoszkowskii* Rad. des. Móczár 997 [handwritten] [red label].

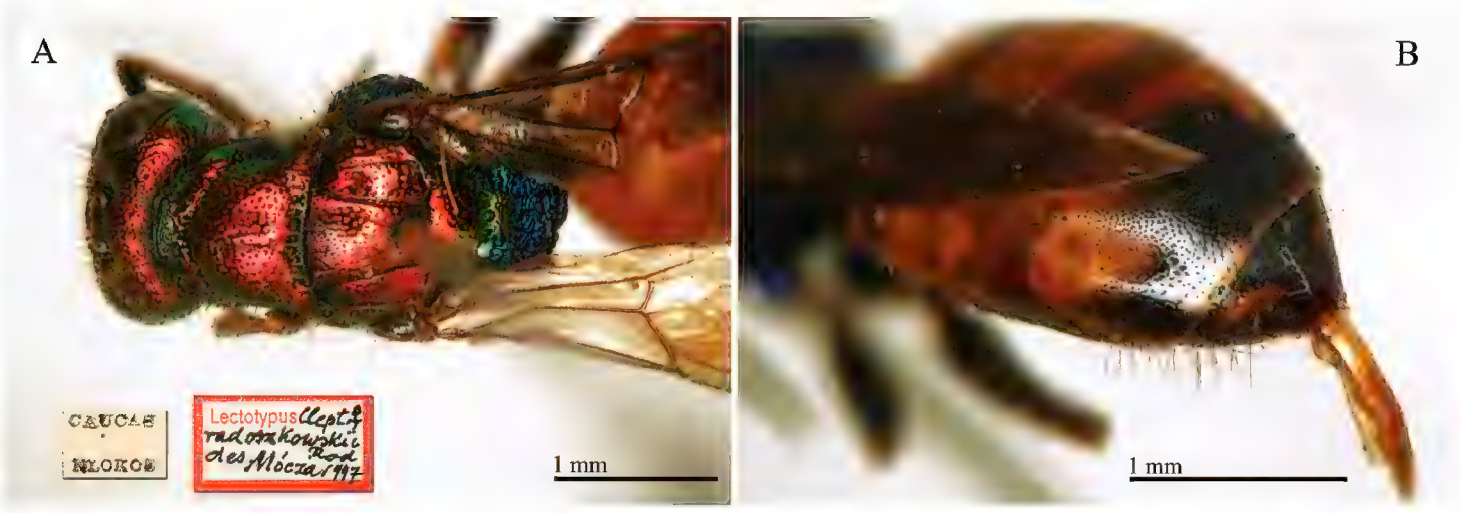



**Plate 53.** *Cleptes radoszkowskii* Mocsáry, 1889, lectotype. **A** Head and mesosoma, dorsal view **B** metasoma, dorso-lateral view.

**Paralectotype** 1♀ [box 59]: Caucas Mlok [printed] // golden rounded label // *Radoszkovsk* Moc [handwritten] // 104 [printed] // Paralectotypus [printed] C. ♀ *radoszkowskii* Rad. des. Móczár 1997 [handwritten] [red label].

**Paralectotype** 1♂ [box 59]: a-Cauc [printed] // Paralectotypus *Cl. radoszkowskii* Rad. des. Móczár 1996 [handwritten] [red label] // *Cleptes femoralis* [handwritten] det. L. Móczár, 1996.

**Remarks.** Kimsey and Bohart (1991: 63) included *Cleptes radoszkowskii* in the *Cl. semiauratus* group. Móczár (1997: 32) placed *Cl. radoszkowskii* in the subgenus *Holcocleptes*, *Cl. aerosus* group, after type examination. Móczár (1998: 338) added detailed informations, keys, description of the male and the lectotype designation. He found that the male paralectotype of *Cl. radoszkowskii* belongs to a different species: *Cleptes femoralis* Mocsáry, 1889.

**Current status.** *Cleptes radoszkowskii* Mocsáry, 1889.

### *Elampus ambiguus* Eversmann, 1857

Plate 54

*Elampus ambiguus* Eversmann 1857: 549 *nec* Dahlbom, 1854.

**Type locality.** "Cepi in provincia Saratoviensi".

**Holotype** ♂ [box 59]: scutellum armatum [hadwritten by Eversmann] // red rounded label // blue rounded label // *Elampus ambiguus* Dlbm [handwritten by Eversmann] // Sarat. [handwritten] // golden rounded label // *Evermanni* Mocs. [handwritten by Radoszkowski] // 105 [printed].

**Remarks.** The description provided by Linsenmaier (1959: 23) is mostly accurate. The main difference is in the colour of the specimen. The type is not entirely black-violet, but rather blue, with a few light blue metallic reflections on legs and on the

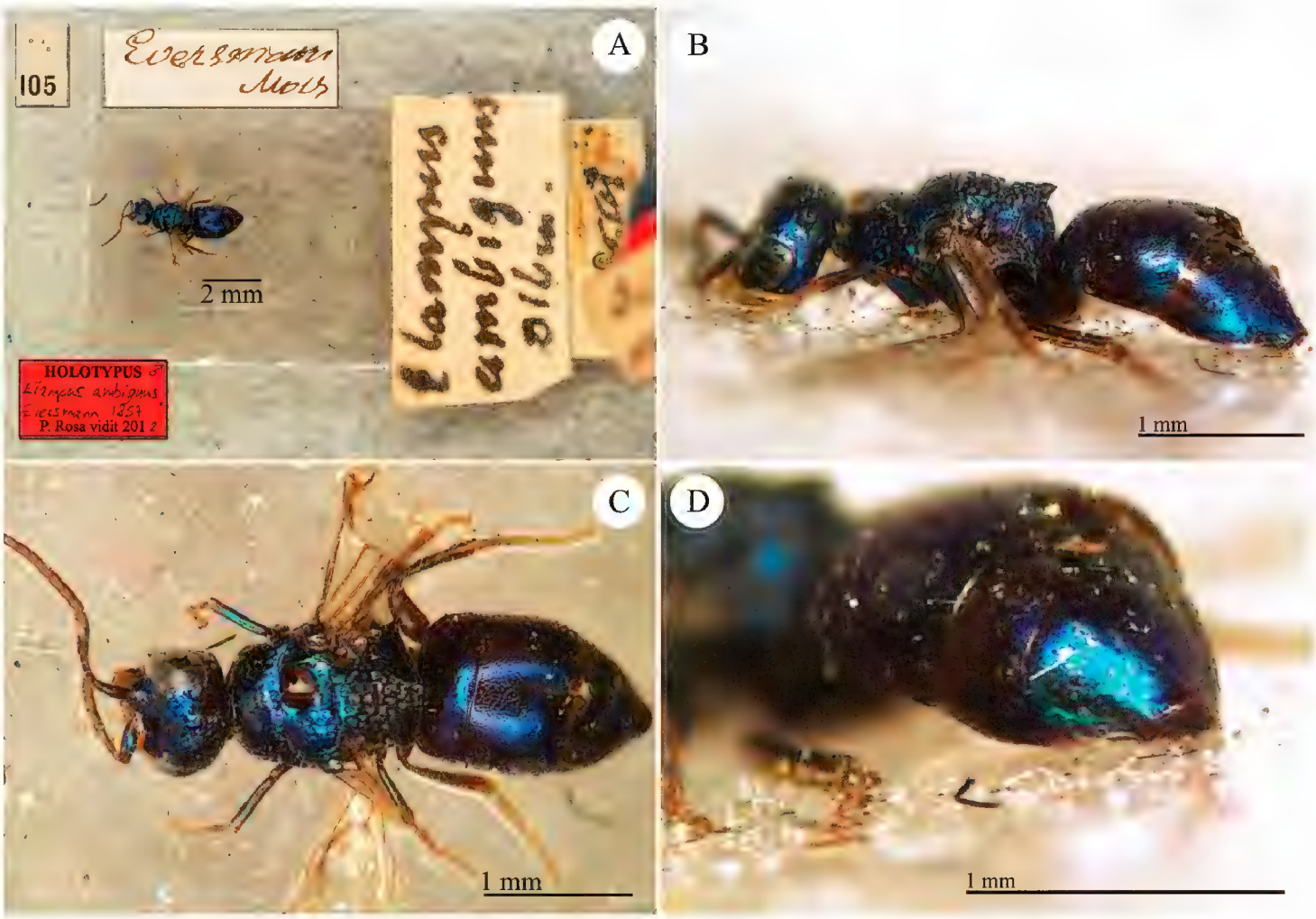



**Plate 54.** *Elampus ambiguus* Eversmann, 1857, holotype. **A** Habitus, dorsal view **B** habitus, lateral view **C** habitus, dorsal view **D** third metasomal tergite, posterior view.

lateral sides of mesonotum. Only the metanotum and the metanotal projection appear dark blue to dull black.

**Current status.** *Elampus eversmanni* (Mocsáry, 1889), replacement name for *Elampus ambiguus* Eversmann, 1857.

### *Elampus bidentatus* Eversmann, 1857

*Elampus bidentatus* Eversmann 1857: 548.

**Type locality.** "Cepi in promont. Uralensib.".

**Holotype** ♀ [box 59]: Spa... Juni? [handwriting only partly readable] // *Elampus bidentulus* Kl. Dlbm. [handwritten by Eversmann] // brawn rounded label // red rounded label.

**Remarks.** The examination of the type confirms that the name *Elampus bidentatus* is merely an incorrect spelling of *E. bidentulus* (Lepeletier, 1806). Eversmann listed this species as "*Elampus bidentatus* Klug, Dalbm". But the identification label attached to the type specimen reads "*Elampus bidentulus* Kl. Dlbm" in Eversmann's handwriting. Dahlbom (1854) listed *E. bidentulus* Klug [and not *bidentulus* Lepeletier] in the dichotomous key (pagg.: 38, 39), in the index (pag. 406), and in the list of examined specimens (pag. 40). Eversmann was confused by this mistake. Dahlbom did

not examine Lepeletier's type and based his keys and description on a single specimen labelled by Klug as *E. bidentulus* in MNHU. The specimen matches the current interpretation of *P. bidentulus* (Lepeletier) (Rosa 2006a; Rosa and Xu 2015) and the name can simply be considered an incorrect subsequent spelling.

**Current status.** *Philoctetes bidentulus* (Lepeletier, 1806) (synonymised by Mocsary 1889: 85; transferred by Niehuis 2000).

## *Elampus femoralis* Eversmann, 1857

*Elampus femoralis* Eversmann 1857: 547.

**Type locality.** "Cepi in prov. Casanensi".

**Holotype** ♀ [box 59]: golden rounded label // red rounded label // *Elampus femoralis* Evm [handwritten by Eversmann] // Kas. [handwritten by Radoszkowski] // type D. Evers. [handwritten] // 80 [printed].

**Remarks.** The specimen was originally pinned, and later glued on a plastic label. The right fore-leg is glued apart; it lacks some tarsi in all the legs, with the exception of the right fore-leg and the left hind-leg.

**Current status.** *Elampus bidens* (Förster, 1853) (synonymised by Mocsáry 1889: 73).

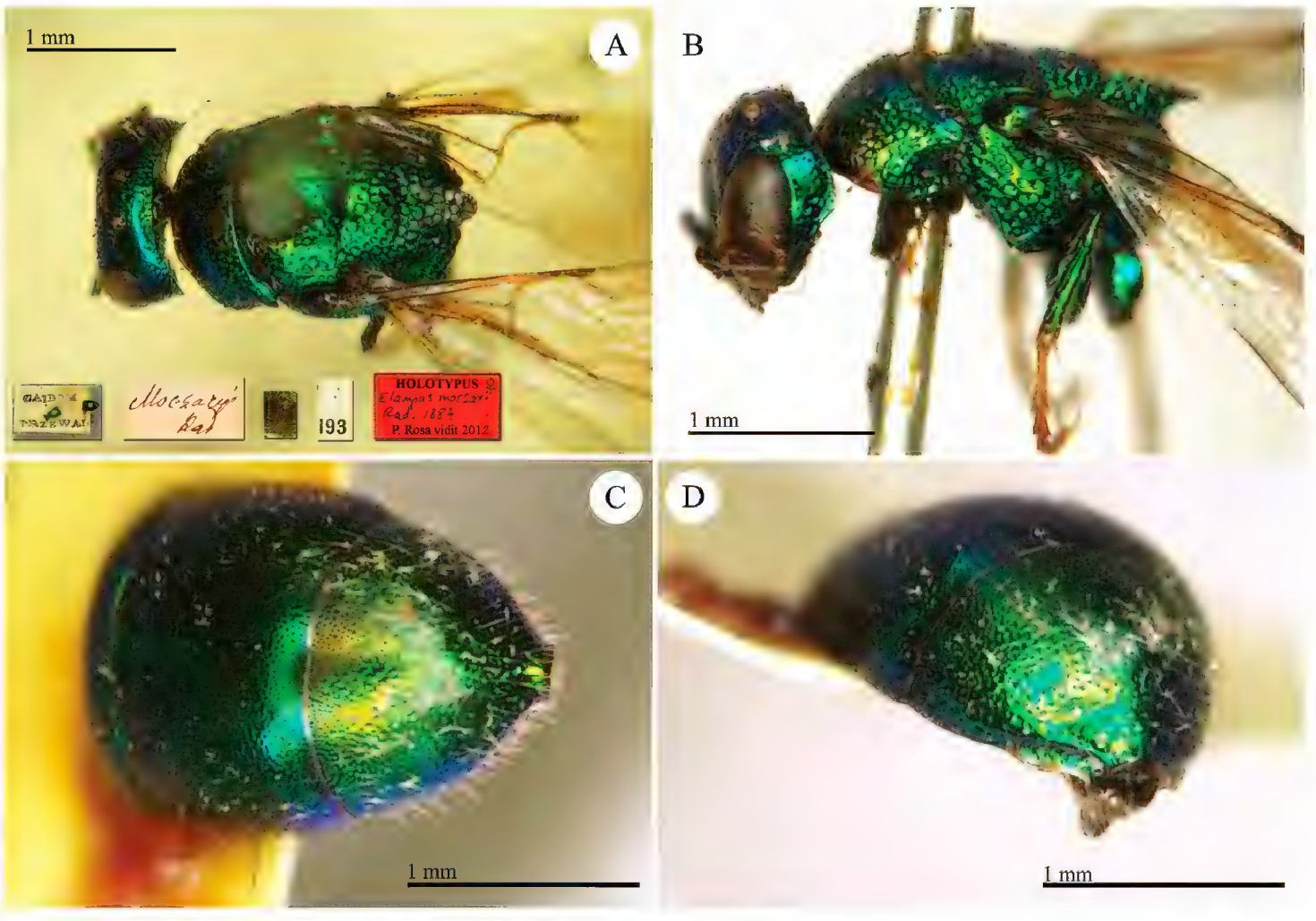



**Plate 55.** *Elampus mocsaryi* Radoszkowski, 1887, holotype. **A** Head and mesosoma, dorsal view **B** head and mesosoma, lateral view **C** metasoma, dorsal view **D** third metasomal tergite, posterior view.

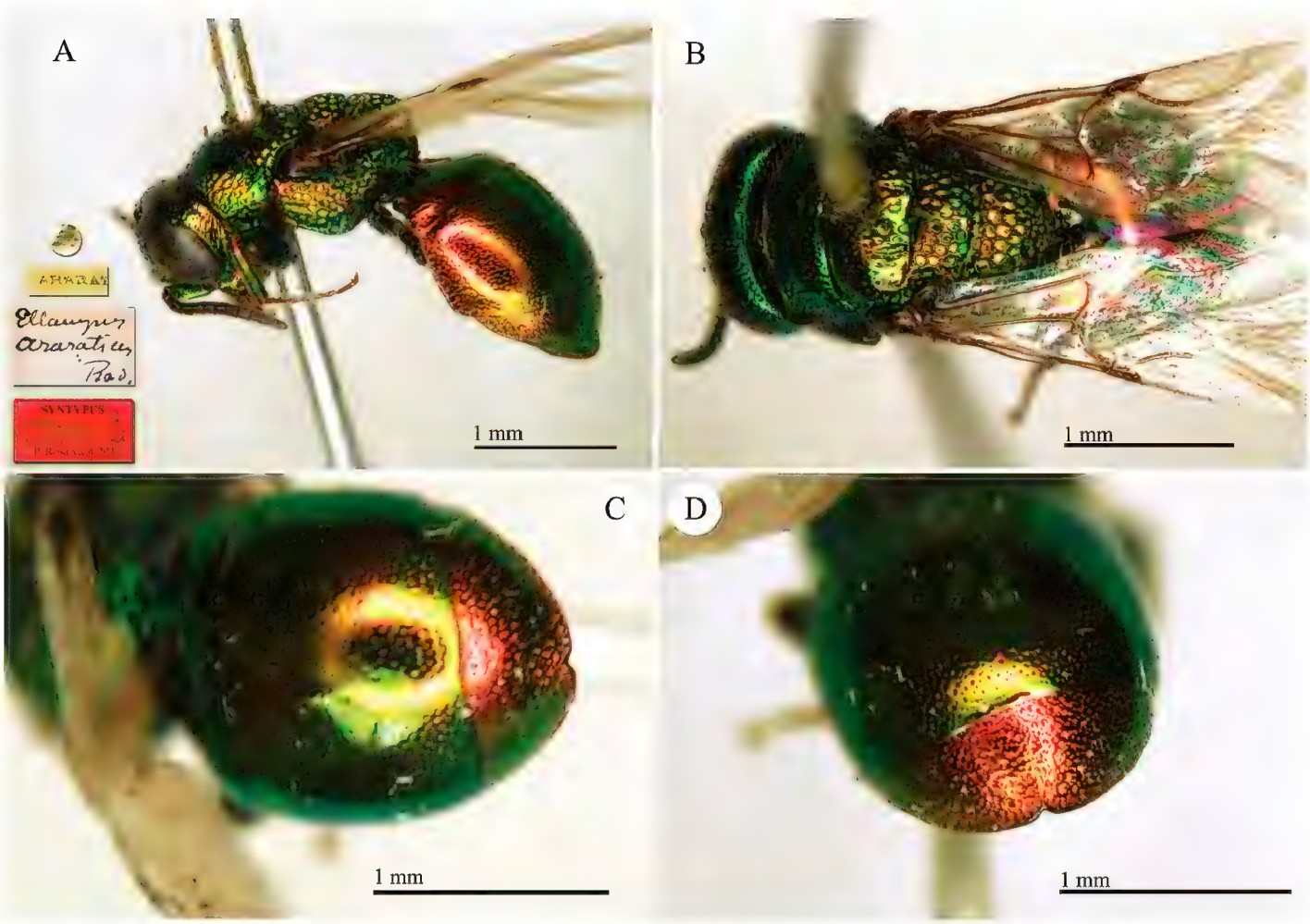



**Plate 56.** *Ellampus araraticus* Radoszkowski, 1890, syntype. **A** Habitus, lateral view **B** habitus, dorsal view **C** metasoma, dorso-lateral view **D** third metasomal tergite, posterior view.

***Elampus mocsaryi* Radoszkowski, 1887**
Plate 55

*Elampus Mocsari* (!) Radoszkowski 1887: 45.

**Type locality.** "Zaïdam".

**Holotype** ♀ [box 59]: Gaidam Przewal [printed] [yellow label] // *Mocsaryi* Rad [handwritten by Mocsáry] // golden rectangular label // 193 [printed].

**Remarks.** The holotype is badly damaged. It lacks the right flagellum and pedicellus; nine flagellomeres of the left antenna; both fore-legs and the right hind-leg; the metasoma is glued to the locality label.

**Current status.** *Elampus mocsaryi* Radoszkowski, 1887 (emendated by Mocsáry 1889: 80).

***Ellampus araraticus* Radoszkowski, 1890**
Plate 56

*Ellampus araraticus* Radoszkowski 1890 (1889): 508.

**Type locality.** "Ararat, entre Sardar-Abadu et Sarabandy (13,000')" [given in the introduction].

**Plate 57.** *Ellampus hypocrita* du Buysson, 1893, paralectotype. **A** Habitus, dorsal view **B** habitus, lateral view **C** third metasomal tergite, posterior view.

**Syntype** ♀ [box 59]: golden rounded label // Ararat [printed] [yellow label] // *Ellampus araraticus* Rad. [handwritten by Mocsáry].

**Remarks.** Kimsey and Bohart (1991: 224) placed *Ellampus araraticus* in the genus *Holophris*, without type examination. Based on the type analysis, *E. araraticus* belongs to the genus *Philoctetes sensu* Kimsey and Bohart (1991). Another possible syntype is housed in MNHN (general collection box 5). The type is in perfect condition.

**Current status.** *Philoctetes araraticus* Radoszkowski, 1890, **comb. n.**

## *Ellampus hypocrita* du Buysson, 1893

Plate 57

*Ellampus hypocrita* du Buysson 1893: 246.

**Type locality.** "Mongolie: Kansu-Ielisyn-Kuse (Radoszkowsky); Perse: mer Caspienne occidentale".

**Paralectotype** 1♀ [box 59]: golden rounded label // *Ellampus hypocrites* n.sp. *Buyss.* [handwritten by du Buysson] // Kansu Jelisyn Kuse 20/VII [handwritten].

**Remarks.** The species was described on two specimens conserved in MNHN and Kraków. Kimsey and Bohart (1991) included *Ellampus hypocrita* in the genus *Omalus*, but the punctuation on the mesonotum and the shape of the mesopleuron are typical characteristics of the genus *Pseudomalus*, therefore we propose the new combination *Pseudomalus hypocrita* (du Buysson, 1893). This specimen is close to *P. turkestanicus* (Mocsáry, 1889), but the margin of the third tergite has a distinct transparent rim, deeply incised in the middle, with two evident undulations similar to teeth at the notch base. Kimsey and Bohart (1991: 248) designated the lectotype by inference of "holotype" (ICZN art. 74.6).

**Current status.** *Pseudomalus hypocrita* (du Buysson, 1893), **comb. n.**

## *Ellampus montanus* Mocsáry, 1890

Plate 58

*Ellampus* (*Notozus*) *montanus* Mocsáry 1890: 49.

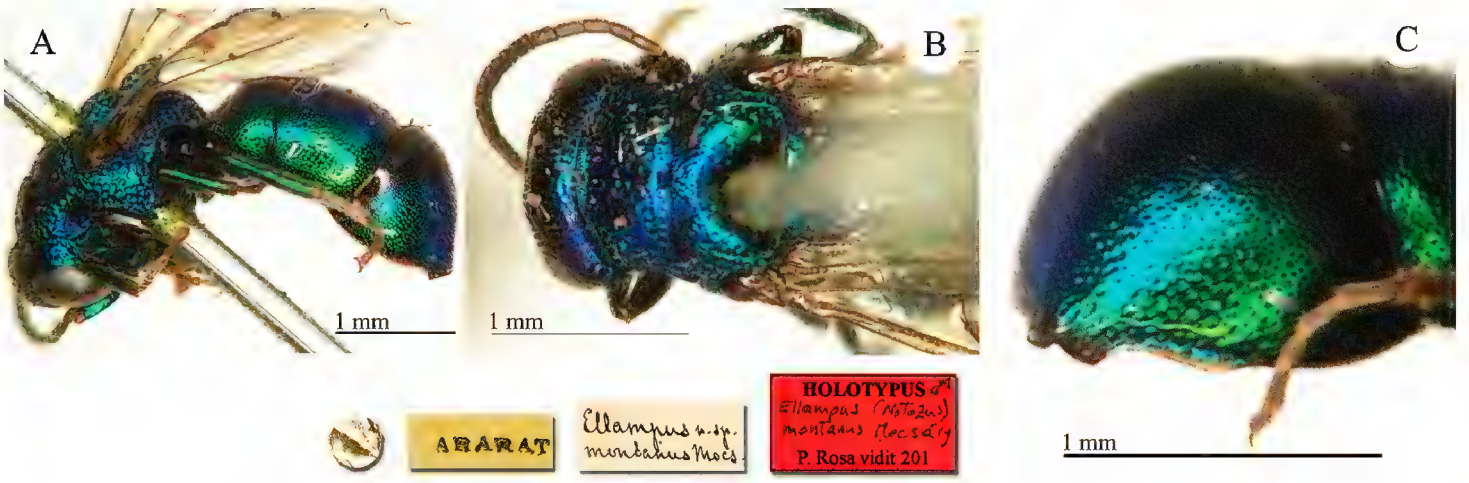



**Plate 58.** *Ellampus* (*Notozus*) *montanus* Mocsáry, 1890, holotype. **A** Habitus, lateral view **B** mesosoma, dorsal view **C** third metasomal tergite, dorso-lateral view.

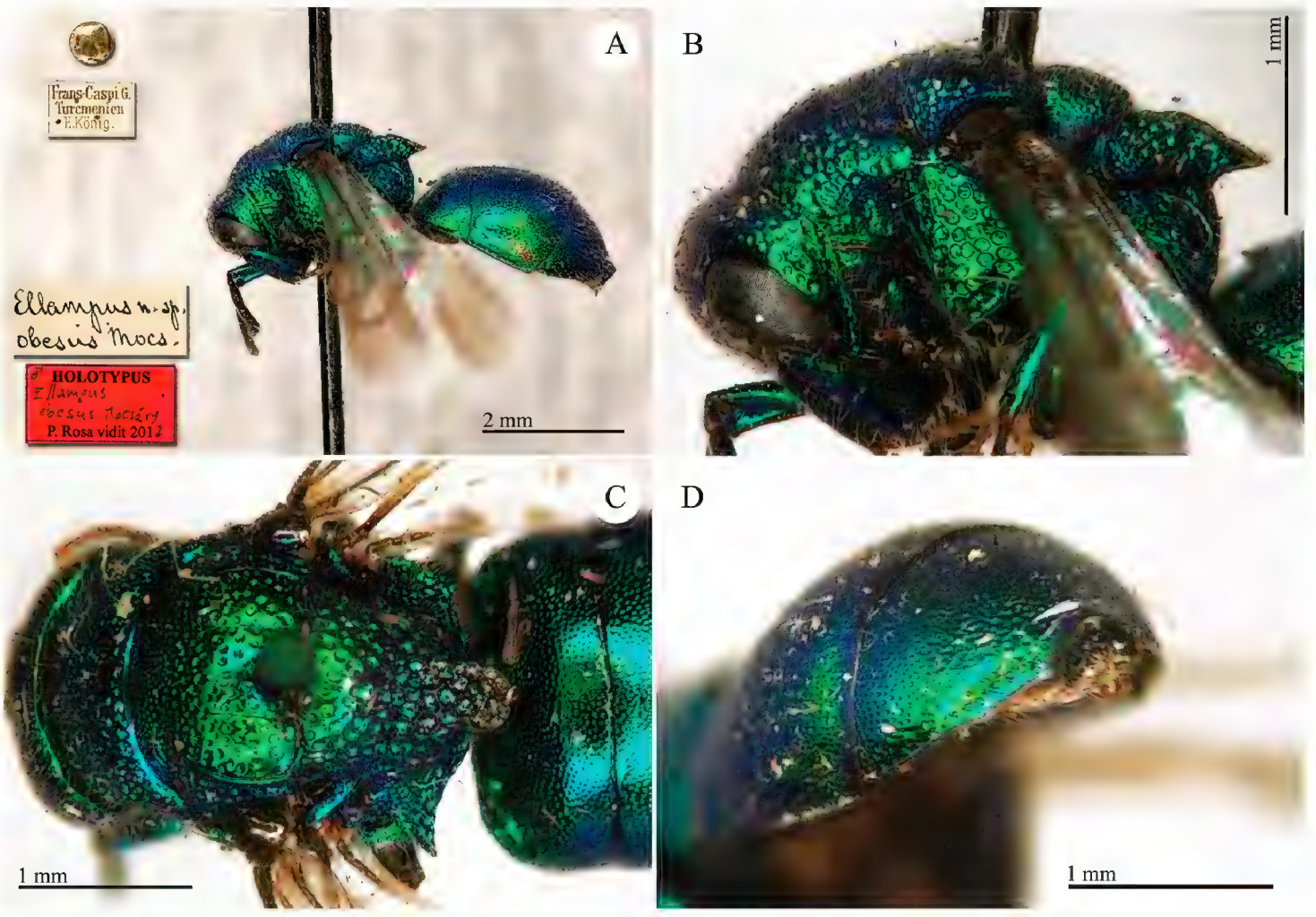



**Plate 59.** *Ellampus* (*Notozus*) *obesus* Mocsáry, 1890, holotype. **A** Habitus, lateral view **B** head and mesosoma, lateral view **C** mesosoma, dorsal view **D** third metasomal tergite, posterior view.

**Type locality.** "Patria: Montes Ararat Armeniae, ibidem a Cl. Dom. Mlokosewitz detectus (Coll. Radoszkovszkyi)".

**Holotype** ♂ [box 59]: golden rounded label // Ararat [printed] [yellow label] // *Ellampus* n.sp. *montanus* Mocs [handwritten by Mocsáry].

**Remarks.** The type lacks the right flagellum.

**Current status.** *Elampus montanus* (Mocsáry, 1890) (transferred by Kimsey and Bohart 1991: 168).

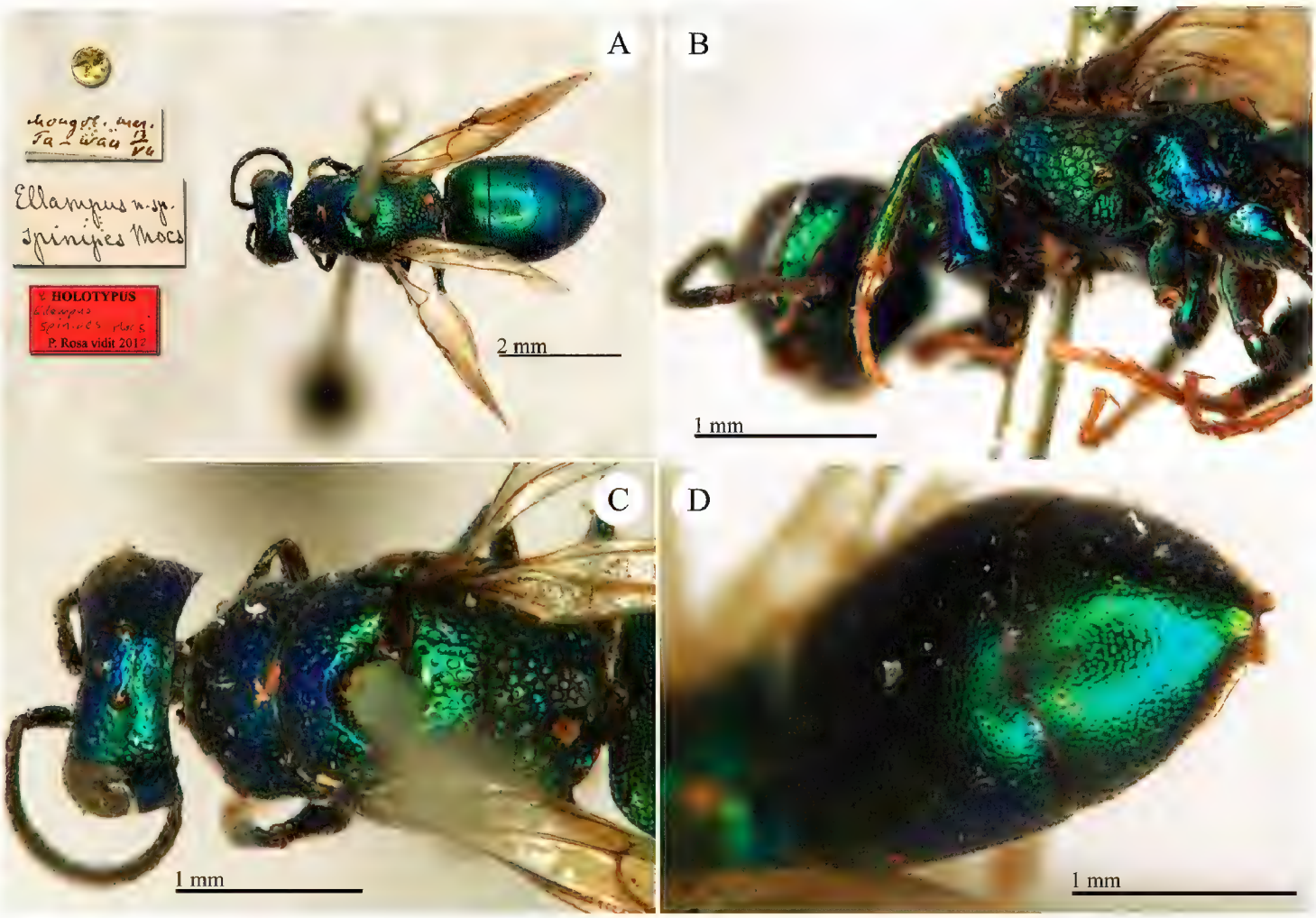



**Plate 60.** *Ellampus* (*Notozus*) *spinipes* Mocsáry, 1890, holotype. **A** Habitus, dorsal view **B** fore-leg, spine on femur **C** head and mesosoma, dorsal view **D** third metasomal tergite, dorso-lateral view.

***Ellampus obesus* Mocsáry, 1890**
Plate 59

*Ellampus* (*Notozus*) *obesus* Mocsáry 1890: 48.

**Type locality.** "Patria: territorium Transcaspicum (Turcomania), a Dom. E. König detectus (Coll. Radoszkovszkyi)".

**Holotype** ♂ [box 59]: Frans-Caspi G. Turcmenien E. König. [printed] // golden rounded label // *Ellampus* n.sp. *obesus* Mocs. [handwritten by Mocsáry].

**Remarks.** Radoszkowski (1893) described the female of *Ellampus obesus* with the name *E. komarowi*.

**Current status.** *Elampus obesus* (Mocsáry, 1890).

***Ellampus spinipes* Mocsáry, 1890**
Plate 60

*Ellampus* (*Notozus*) *spinipes* Mocsáry 1890: 49.

**Type locality.** "Patria: Mongolia meridionalis (Ta-wan), a Cl. G. N. Potanin detectus (Coll. Radoszkovszkyi)".

**Holotype** ♀ [box 59]: golden rounded label // Mongol. mer. Ta-wan 13/VII [handwritten] // *Ellampus* n.sp. *spinipes* Mocs [handwritten by Mocsáry].

**Remarks.** The type lacks the left mid-leg.

**Current status.** *Elampus spinipes* (Mocsáry, 1890) (transferred by Kimsey and Bohart 1991: 171).

### *Ellampus turkestanicus* Mocsáry, 1889

*Ellampus Turkestanicus* Mocsáry 1889: 101.

**Type locality.** "Turkestania, Taschkend (Coll. Rad.)".

**Holotype** [sex unknown] [box 59]: 30 [printed] [light blue label] // Пейпамбе [printed] // Tachkent [handwritten by Radoszkowski] // *Ellampus Turkestanicus* Mocs [handwritten by Radoszkowski] // 194 [printed] [yellow label].

**Remarks.** The type is seriously damaged. It lacks both antennae after the scapus, all the legs, wings and the metasoma. Based on the mesosoma punctuation it belongs to the genus *Pseudomalus*. In the Mocsáry collection (HNHM) there are six specimens labelled as autotypes (from type n° 134857 to type n° 134862), which are not part of the type series, but they were collected in "Turkestan", after the description.

**Current status.** *Pseudomalus turkestanicus* (Mocsáry, 1889) (transferred by Kimsey and Bohart 1991: 270).

### *Ellampus violascens* Mocsáry, 1889

Plate 61

*Ellampus* (*Notozus*) *violascens* Mocsáry 1889: 81.

**Type locality.** "Patria: Turkestania (Taschkend, Coll. Rad.)".

**Holotype** ♀ [box 59]: golden rounded label // Сыръ-Дарья [printed] // 106// *Ellampus* n.sp. *violascens* Mocs [handwritten by Radoszkowski].

**Remarks.** The type lacks the left antenna, the left mid-leg and the metasoma.

**Current status.** *Elampus violascens* (Mocsáry, 1889) (transferred by Kimsey and Bohart 1991: 172).

### *Euchroeus amabilis* Mocsáry, 1889

*Euchraeus* [sic!] *amabilis* Mocsáry (Inédite) (in Radoszkowski) 1889: 36.

**Type locality.** "Senegal".

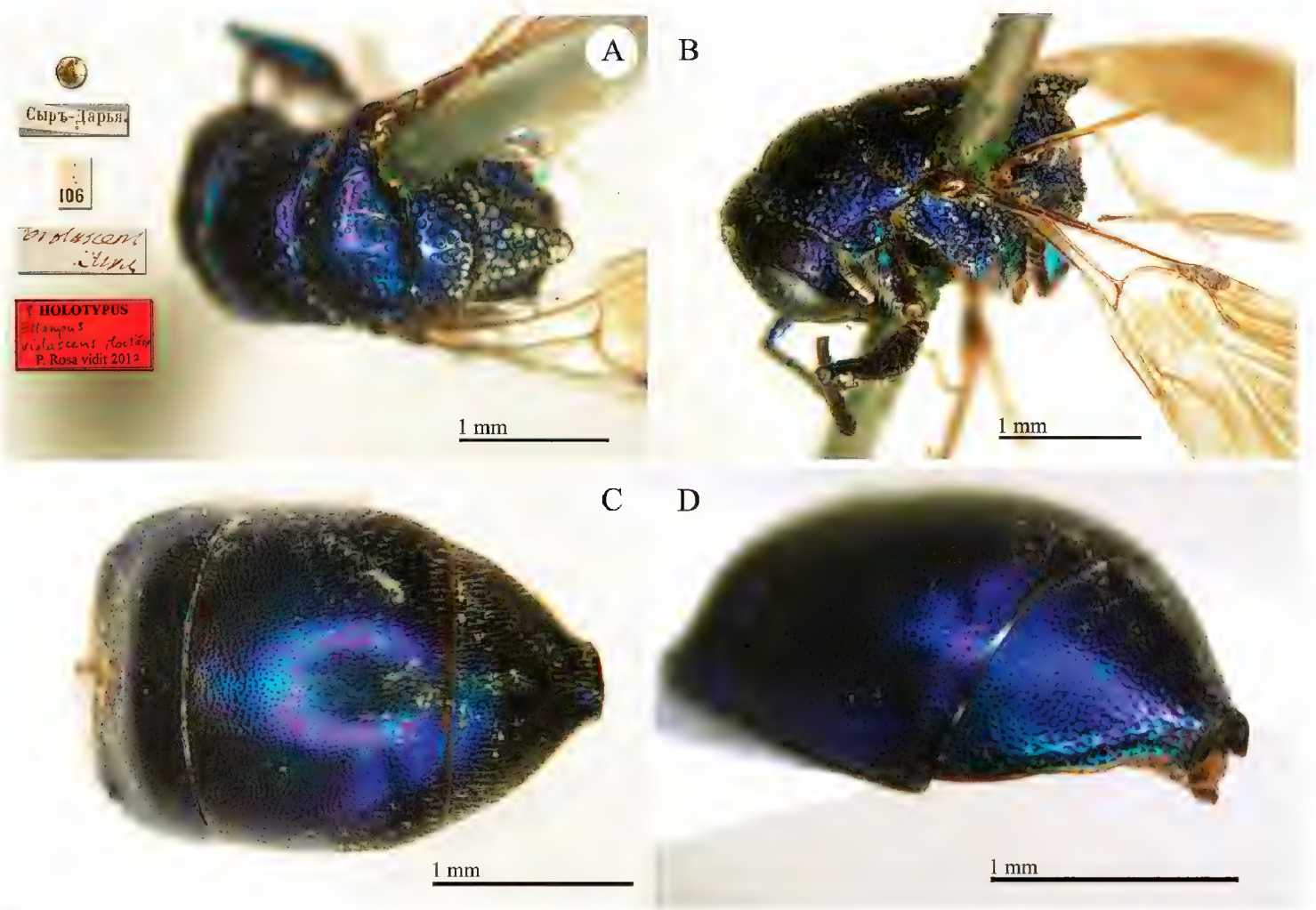



**Plate 61.** *Ellampus* (*Notozus*) *violascens* Mocsáry, 1889, holotype. **A** Mesosoma, dorsal view **B** mesosoma, lateral view **C** metasoma, dorsal view **D** third metasomal tergite, dorso-lateral view.

**Syntype** 1♂ [box 62]: golden rounded label // Seneg. [printed] [green label] // *amabilis* Mocs [handwritten by Radoszkowski].

**Syntype** 1♀ [box 62]: Seneg. [printed] [green label] // label with genitalia.

**Current status.** *Euchroeus candens* Dahlbom, 1854 (synonymised by Madl and Rosa 2012: 85).

### *Hedychrum callosum* Radoszkovsky, 1877

Figure 8

*Hedychrum callosum* Radoszkovsky 1877 (1876): 108.

**Type locality.** "Syra".

**Holotype** ♂ [box 59]: golden rounded label // Syra [handwritten] // *Holopyga ahenea* Dhlb. (*Hed. callosum* Rad.) [handwritten by Mocsáry] // 84 [printed].

**Remarks.** *Hedychrum callosum* Radoszkovsky, 1877 was considered a synonym of *Hedychridium aheneum* (Dahlbom, 1854) by Mocsáry (1887: 13; 1889: 146), Dalla Torre (1892: 20), and Bischoff (1913: 14). Trautmann (1927: 56) considered *Hedychridium aheneum* as a variety of *H. incrassatum* (Dahlbom, 1854), and therefore placed *H. callosum* in the synonymic list of *H. incrassatum*. The following authors (e.g. Linsenmaier 1951: 98; Kimsey and Bohart 1991: 196) re-evaluated *H. aheneum*, but *H. callosum* remained

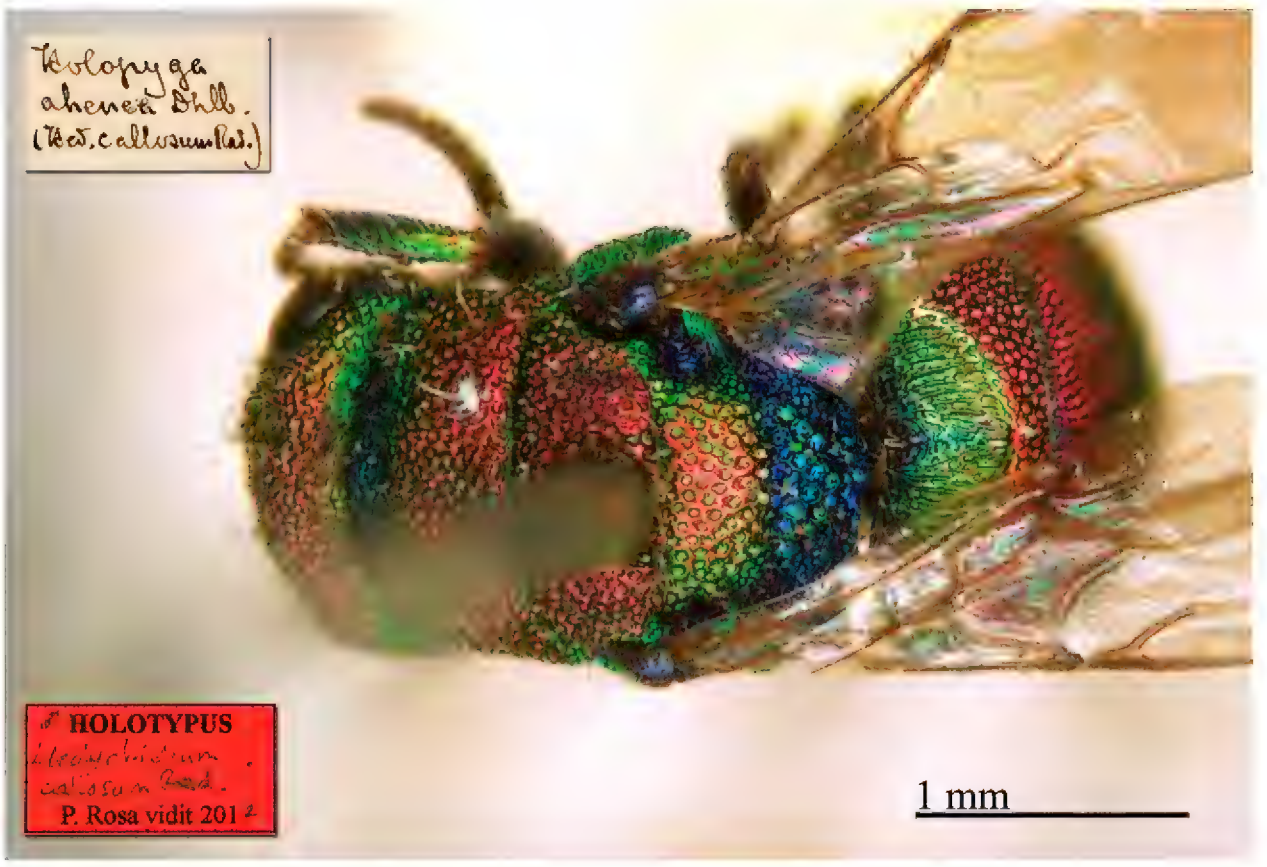



**Figure 8.** *Hedychrum callosum* Radoszkovsky, 1877, holotype, habitus, dorsal view.

in synonym with *H. incrassatum*. *Hedychridium incrassatum* is found only in the western Mediterranean countries, while *H. aheneum* is spread in the eastern Mediterranean countries, Middle East and central Asia (Linsenmaier 1959, 1968). In southern Italy both *H. aheneum* and *H. incrassatum* (described from Sicily) are present (Strumia 1995).

**Current status.** *Hedychridium aheneum* (Dahlbom, 1854) (synonymised by Mocsáry 1887).

### *Hedychrum cyaneum* Mocsáry, 1889

*Hedychrum cyaneum* Mocsáry (in Radoszkowski) 1889: 10 *nec* Brullé, 1846.

**Type locality.** "Sibérie orientale".

**Paralectotype** 1♂ [box 59]: golden rounded label // Siberie Orient. [printed] // 109 // *cyaneum* Mocs. [handwritten by Mocsáry].

**Remarks.** Mocsáry described *Hedychrum cyaneum* (later replaced by *He. simile*) based on a type series [♂♀]. In the original description (Mocsáry (in Radoszkowski) 1889), the only type locality is Siberia orientalis. But in his monograph (Mocsáry 1889: 158, under the replacement name *He. simile*), he specified: Siberia orientalis (Coll. Rad.! et Mus. Hung.); China borealis (Ta-tschian-sy, Mus. Hung.). The lectotype designated by French (in Bohart and French 1986), from China, is the female listed by Mocsáry.

**Current status.** *Hedychrum simile* Mocsáry, 1889, replacement name for *He. cyaneum* Mocsáry 1889 (Mocsáry 1889: 158).

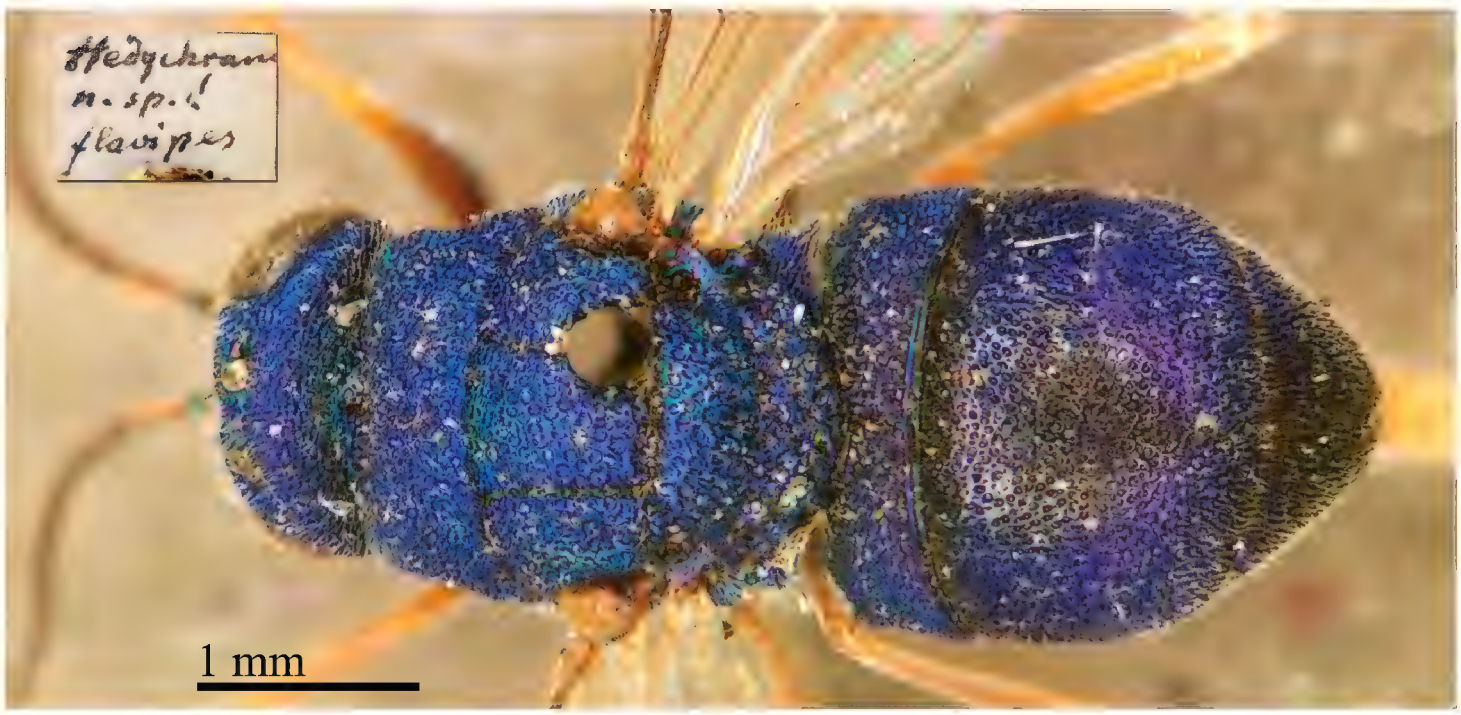



**Figure 9.** *Hedychrum flavipes* Eversmann, 1857, syntype, habitus, dorsal view.

### ***Hedychrum flavipes* Eversmann, 1857**
Figure 9

*Hedychrum flavipes* Eversmann 1857: 552.

**Type locality.** "Hab. in campis orientalibus et in promontoriis Uralensibus".

**Syntype** 1♀ [box 59]: golden rounded label // *Hedychrum* n. sp. *flavipes* Evm. [handwritten by Eversmann] // [handwriting not readable] // 79 [printed].

**Remarks.** The type was originally pinned and later glued on a plastic label with extended ovipositor. The type is partially damaged: the left antenna is broken, glued on the label, and it lacks the tarsus of left mid-leg, as well as two terminal tarsal segments of the right mid-leg.

Semenov-Tian-Shanskij (1954) described the genus *Colpopyga* based on *H. flavipes* Eversmann. This species has the metasomal external segments morphologically modified. Noskiewicz and Lorencowa (1963) demonstrated that also the internal segments have a deep modified shape. Future molecular analysis may clarify the systematic position of this taxon.

**Current status.** *Hedychridium flavipes* (Eversmann, 1857) (transferred by du Buysson (in André) 1891: 182).

### ***Hedychrum mlokosiewitzi* Radoszkovsky, 1877**
Figure 10

*Hedychrum Mlokosiewitzi* Radoszkovsky 1877 (1876): 109.

**Type locality.** "Envoyé du Caucase par Mr. Mlokosiewitz".

**Figure 10.** *Hedychrum mlokosiewitzi* Radoszkovsky, 1877, syntype, habitus, dorsal view.

**Syntypes** 6♂♂ and 2♀♀ [box 59]: Cauca Mlokos [some with label: Caucas Mlo-ko] [printed].

**Remarks.** One syntype was dissected and the genital capsule was glued on a label; this specimen bears a supplementary label: "21" [handwritten]; another male bears a square golden label. One additional syntype is housed in MNHN (general collection, box 11), in MNHU (box 143.8) and in MSNG (Rosa 2009). In Radoszkowski (1889) the name is cited as *Ho. Mlokosewitzi* Rad., which is an incorrect subsequent spelling.

**Current status.** *Holopyga mlokosiewitzi* (Radoszkovsky, 1877) (transferred by Radoszkovsky 1889: 9).

### *Hedychrum radoszkowskyi* du Buysson, 1893

Figure 11

*Hedychrum radoszkowskyi* du Buysson (in André) 1893: 213.

**Type locality.** "Algérie (Radoszkowsky)".

**Holotype** ♂ [box 59]: Africa [printed] [light blue label] // plastic label with left fore wing glued on it // *Hedychrum Radoszkowskyi* Buyss. n. sp! [handwritten by Buysson].

**Remarks.** The type is partially damaged: it lacks the right antenna and left flagellum. The type locality is different from the one given by du Buysson: Africa instead of Algeria. This information is particularly important, because the species has a typical sub-saharan aspect, and it does not belong to the Palaearctic fauna, as supposed by all

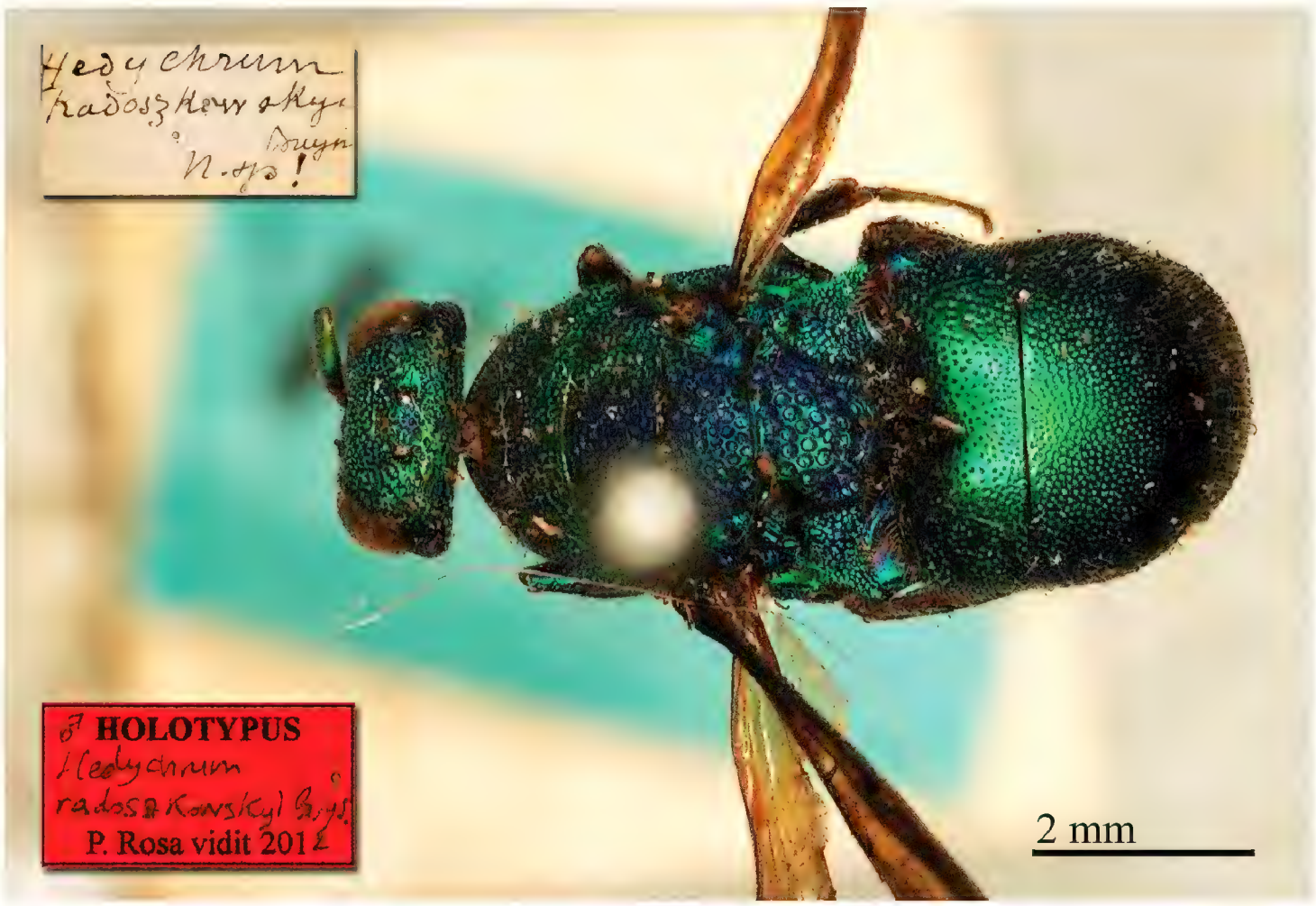



**Figure 11.** *Hedychrum radoszkowskyi* du Buysson, 1893, holotype, habitus, dorsal view.

the authors. Linsenmaier (1999: 45) in his last revision on the northern African species considered *He. radoszkowskyi* as belonging to the Egyptian fauna (sic!), known only from the type "*Mir nicht in Natura bekannt*".

**Current status.** *Hedychrum radoszkowskyi* du Buysson, 1893.

### ***Hedychrum solsky* Radoszkowski, 1877**

Plate 62

*Hedychrum Solsky* Radoszkowski 1877: 7.

**Type locality.** "Habitat in desertis Kisil-kum, in Bairacum et in Ferghana", "Видъ этотъ пойманъ въ 1871 г. 1 мая въ Кизилъ-кумахъ, 3, 17 и 19 мая въ Байракумѣ, 29 и 30 іюня въ Сохѣ." [This species was collected on the 1st of May 1871 at Kisilkumah, on the 3rd, 17th, and 19th of May in Bairacum, on the 29th and 30th of June at Sokha].

**Syntype** 1♂ [box 59]: 30 [printed] [blue-green label with red line] // Кизилъкумъ // *solsky* [handwritten by Radoszkowski] // label with genital capsula.

**Syntype** 1♂ [box 59]: 30 [printed] [blue-green label with red line] // Кизилъкумъ.

**Syntype** 1♀ [box 59]: golden rounded label // Кизилъкумъ // 14 [printed] [pink label with red line] // 78 [printed].

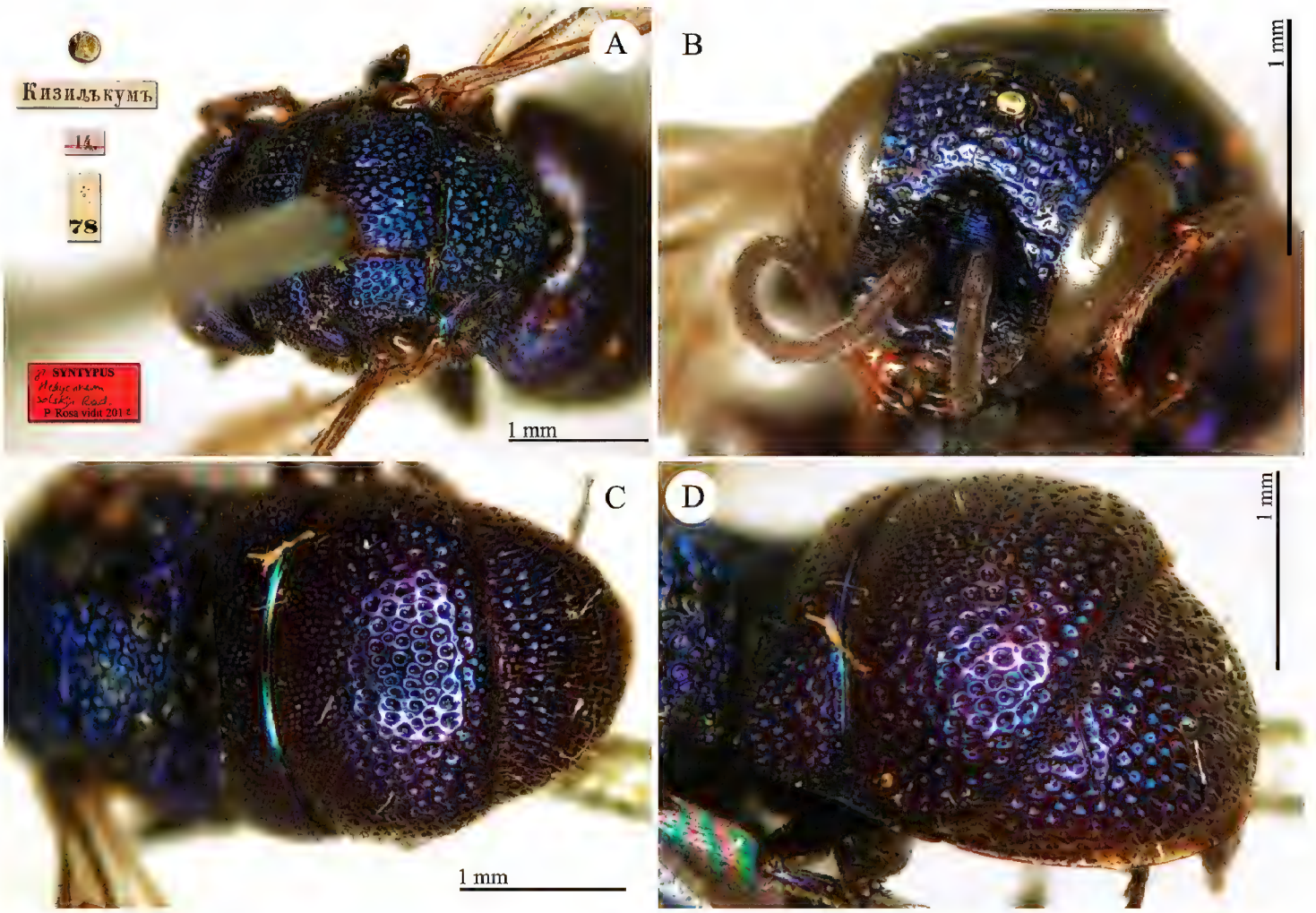



**Plate 62.** *Hedychrum solsky* Radoszkowski, 1877, syntype. **A** Mesosoma, dorsal view **B** head, frontal view **C** metasoma, dorsal view **D** metasoma, dorso-lateral view.

**Remarks.** The collecting dates do not match the localities given in the original description. However, the same situation was found in the other four specimens housed in the Fedtschenko collection in MMU. Therefore a case of *lapsus calami* must be happened and we consider these specimens and those in MMU as syntypes. Another possible male syntype collected at Kizil-kum by Fedtschenko was also found in Gribodo collection (MSNG, not listed in Rosa 2009).

Mocsáry (1889: 116) introduced the correct emendation *He. solskyi*. In Radoszkowski (1889) and Kimsey and Bohart (1991: 235) it was listed as *He. solskii*.

**Current status.** *Holopyga solskyi* (Radoszkowski, 1877) (transferred by Radoszkowski 1889: 7).

### *Holopyga caspica* Mocsáry, 1890

Plate 63

*Holopyga* (*Hedychridium*) *caspica* Mocsáry 1890: 53.

**Type locality.** "Patria: Territorium Maris Caspii (Coll. Radoszkovszkyi)".

**Holotype** ♀ [box 59]: golden rounded label // M. Casp. occ. [printed] [light red label] // *Holopyga* n.sp. *caspica* Mocs. [handwritten by Mocsáry].

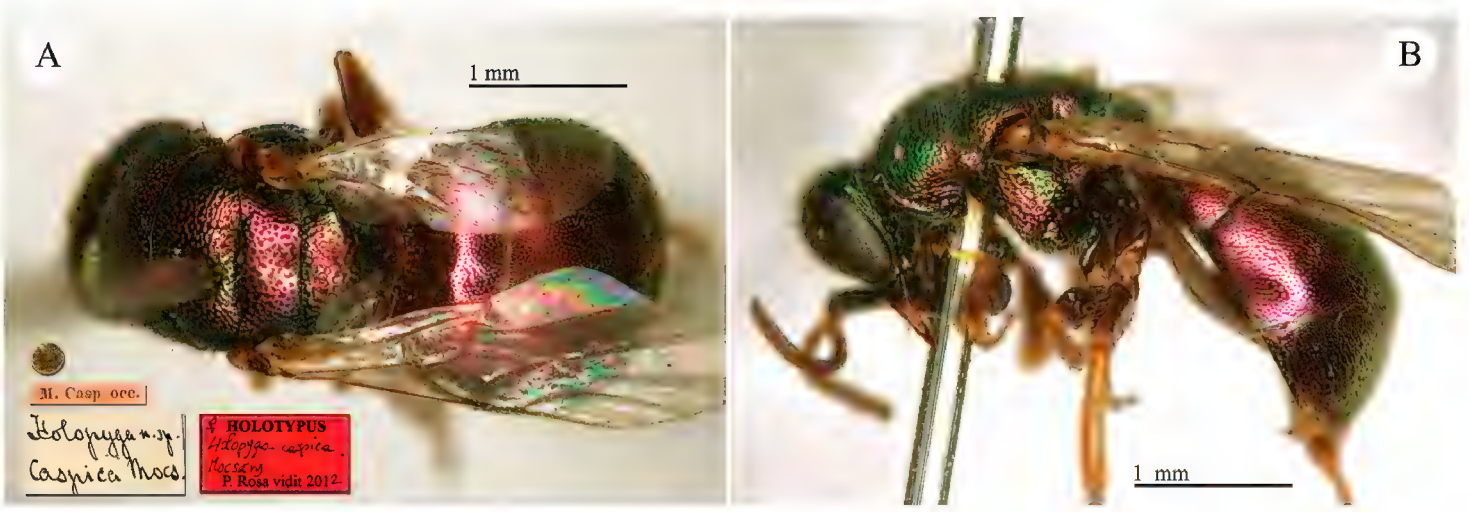



**Plate 63.** *Holopyga* (*Hedychridium*) *caspica* Mocsáry, 1890, holotype. **A** Habitus, dorsal view **B** habitus, lateral view.

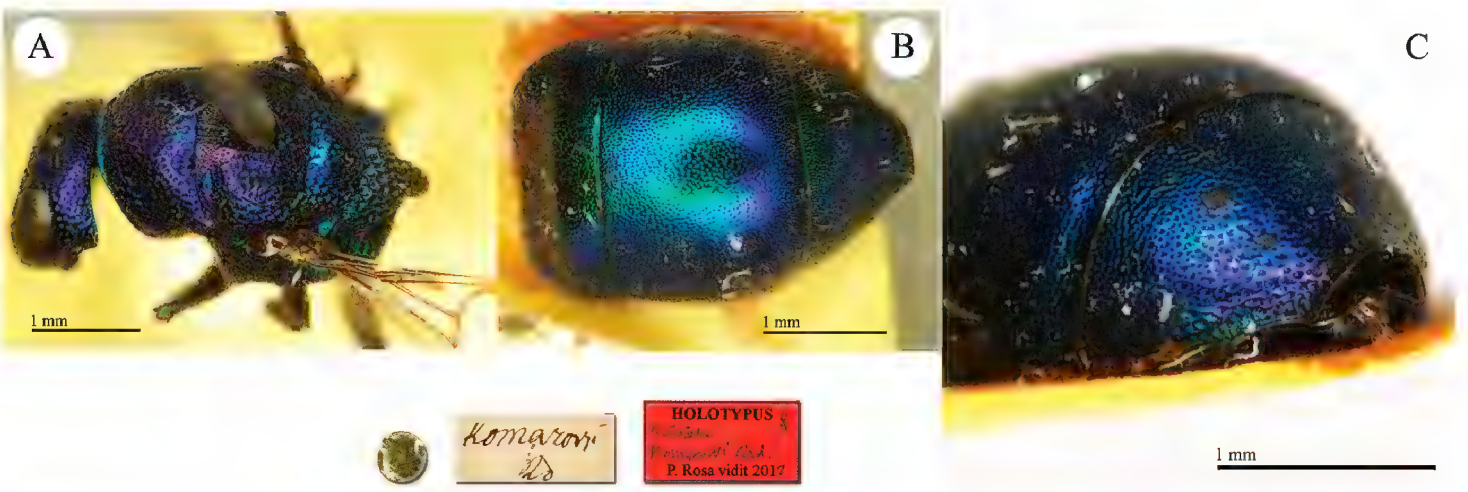



**Plate 64.** *Notozus komarowi* Radoszkowski, 1893, holotype. **A** Mesosoma, dorso-lateral view **B** metasoma, dorsal view **C** third metasomal tergite, posterior view.

**Remarks.** The type lacks the last two flagellomeres of the left antenna, the left fore wing, and two terminal tarsal segments of the left hind-leg.

**Current status.** *Hedychridium caspicum* (Mocsáry, 1890) (transferred by du Buysson (in André) 1891: 189).

## *Notozus komarowi* Radoszkowski, 1893

Plate 64

*Notozus Komarowi* Radoszkowski 1893b (1892): 79.

**Type locality.** "Merw".

**Holotype** ♀ [box 59]: golden rounded label // Semsau Merw [printed] [yellow label] // *Komarowi* Rd [handwritten by Radoszkowski].

**Remarks.** The type is damaged, missing antennae and femora of the fore- and mid-legs. The metasoma is glued on a label. It corresponds to the female of *Elampus obesus* (Mocsáry, 1890). Here it is proposed as new synonym of *E. komarowi* (Radoszkowski, 1893) = *E. obesus* (Mocsáry, 1890).

**Current status.** *Elampus obesus* (Mocsáry, 1890).

### *Notozus productus* var. *vulgatus* du Buysson, 1892

*Notozus productus* var. *vulgatus* du Buysson (in André) 1892: 100.

**Type locality.** "France, Belgique, Allemagne, Russie, Suisse, Grèce, Turkestan.".

**Syntype** 1♀ [box 59]: Atrek [handwritten by Radoszkowski] [yellow label] // [undreadble] [handwritten] // *Notozus productus* Dahlb. var. *vulgatus* Buyss. [handwritten by du Buysson].

**Remarks.** This syntype lacks the head. This syntype belongs to or is closely related to *E. constrictus* (Förster) *sensu* Móczár (1964a).

**Current status.** *Elampus spina* (Lepeletier, 1806) (synonymised and transferred by Kimsey and Bohart 1991: 171).

### *Olochrysis eldari* Radoszkowski, 1893

Plate 65

*Olochrysis Eldari* Radoszkowski 1893a: 242.

**Type locality.** "Caucase, Eldar".

**Holotype** ♀ [box 60]: Eldar Caucas [printed] // *Eldari* [handwritten by Radoszkowski?].

**Remarks.** Kimsey and Bohart (1991: 489) placed *Olochrysis eldari* in the genus *Chrysura* Dahlbom, *C. radians* group, without type examination. It belongs to the genus *Chrysis*, *elegans* group. It is the first available name for *Chrysis angustifrons* var. *ignicollis* Trautmann, 1926. *C. angustifrons* var. *ignicollis* was described as a variety of *C. angustifrons* and it was elevated to species rank by Linsenmaier (1959). Linsenmaier (1959, 1968, 1987) did not list *C. eldari* in his revisions. We propose the new combination: *Chrysis eldari* (Radoszkowski 1893), and the new synonym: *Chrysis angustifrons* var. *ignicollis* Trautmann, 1926 = *Chrysis eldari* (Radoszkowski, 1893). In HNHM, we examined male and female specimens of *Chrysis rubricollis* du Buysson, 1900 collected at Burnabat (Turkey) and identified by du Buysson and Mocsáry. They all match the original description and belong to *Chrysis eldari*. Therefore we also propose the new synonym: *Chrysis rubricollis* du Buysson, 1900 = *Chrysis eldari* (Radoszkowski, 1893).

**Current status.** *Chrysis eldari* (Radoszkowski, 1893), **comb. n.**.

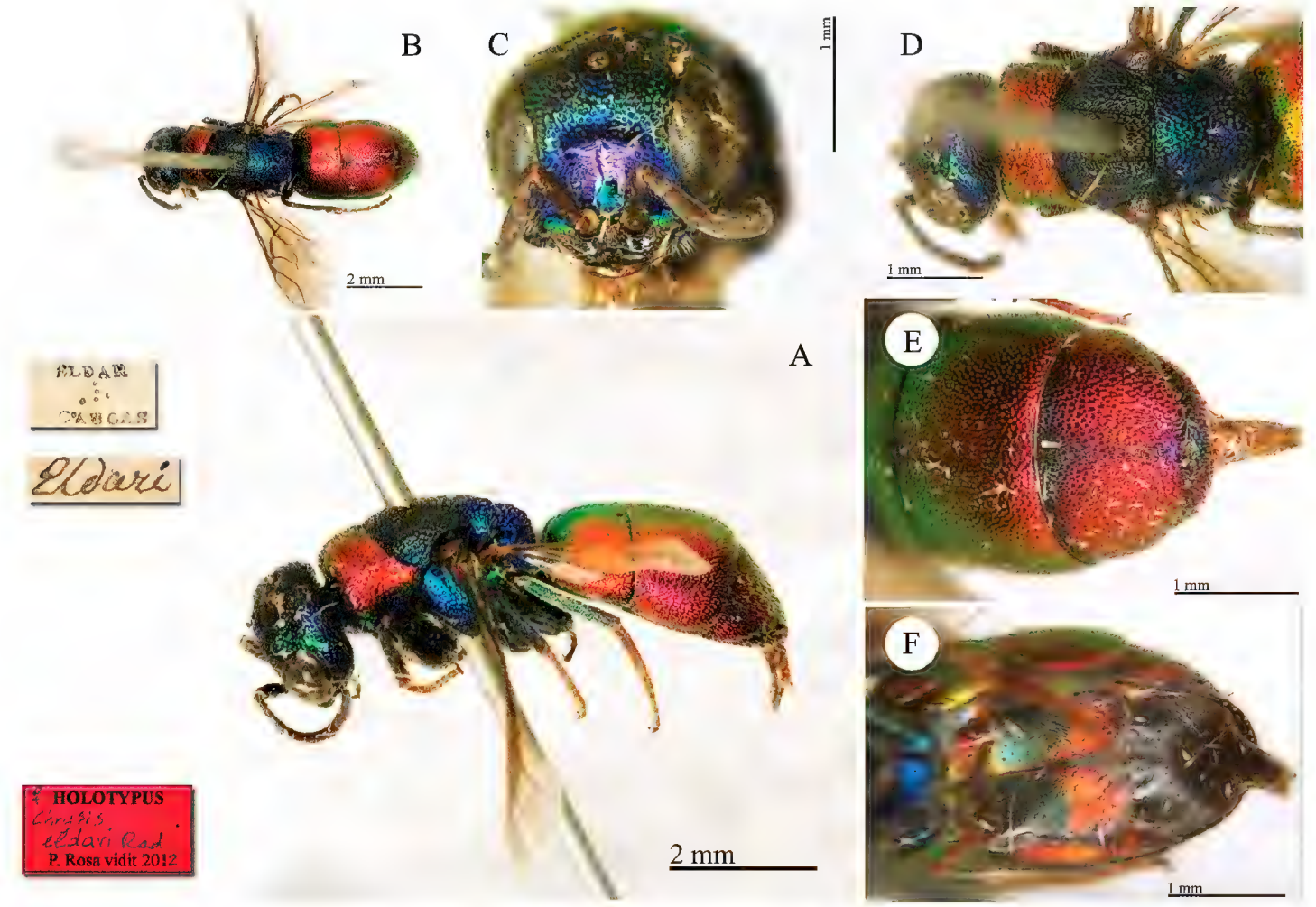



**Plate 65.** *Olochrysis eldari* Radoszkowski, 1893, holotype. **A** Habitus, lateral view **B** habitus, dorsal view **C** head, frontal view **D** mesosoma, dorsal view **E** third metasomal tergite in dorsal view **F** metasoma, ventral view.

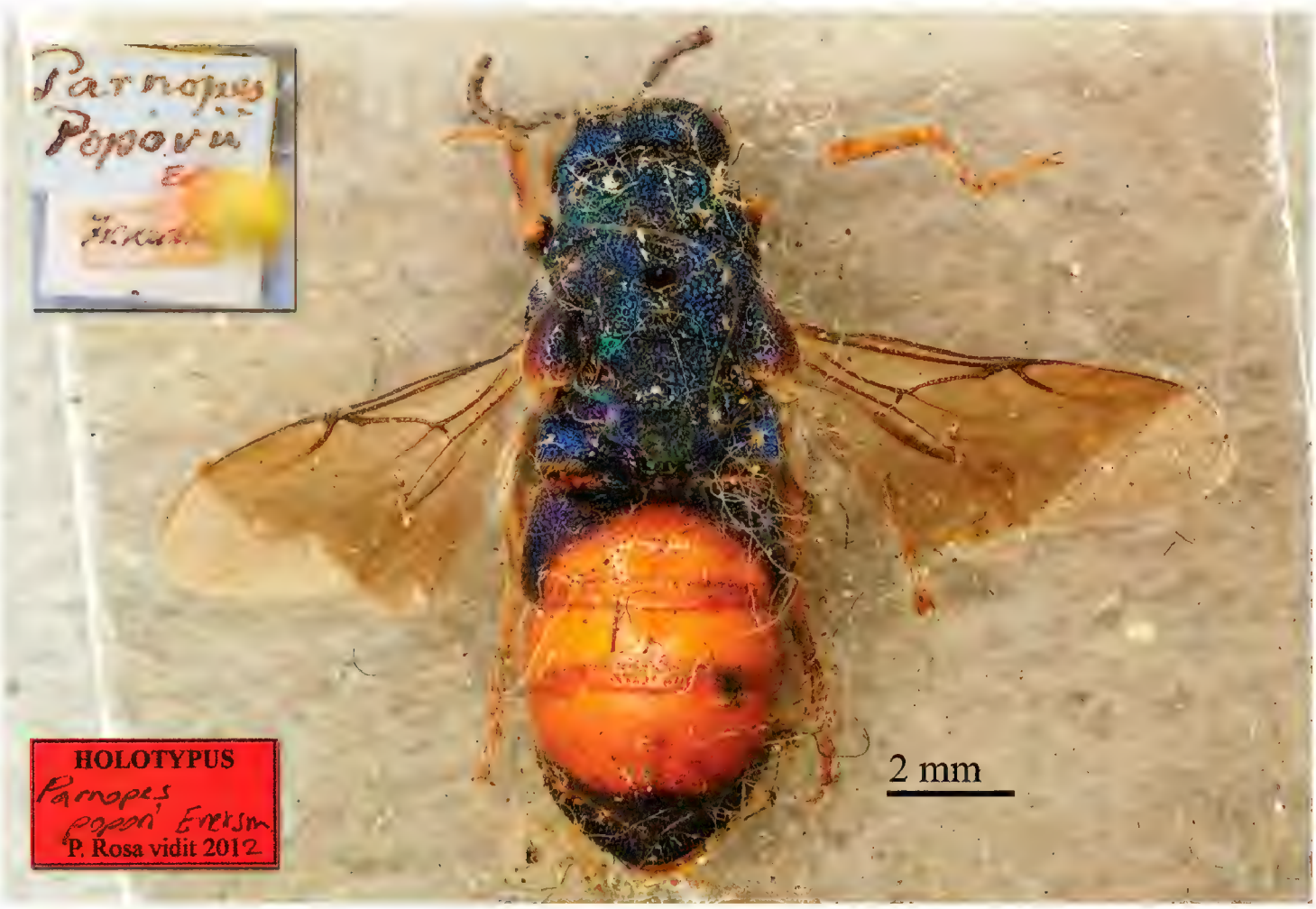



**Figure 12.** *Parnopes popovii* Eversmann, 1857, holotype, habitus, dorsal view.

### *Parnopes popovii* Eversmann, 1857

Figure 12

*Panorpes* [sic!] *popovii* Eversmann 1857: 615.

**Type locality.** "Hab. in campis orientalibus".

**Holotype** ♀ [box 62]: golden rounded label // red rounded label // *Panorpes popovii* Evm. [handwritten by Eversmann] // [unreadable].

**Current status.** *Parnopes popovii* Eversmann, 1857.

### *Spintharis mocsaryi* Radoszkowski, 1890

*Spintharis Mocsaryi* Radoszkowski 1890: 508.

**Type locality.** unknown. "Ararat, entre Sardar-Abadu et Sarabandy (13,000')" [given in the introduction].

**Holotype** ♂ [box 60]: golden rounded label // Caucas Mlok [printed] // *Mocsary* [handwritten by Radoszkowski].

**Remarks.** The specimen found in the Radoszkowski collection under the name *Spintharis mocsaryi* was collected by Mlokosewicz in "Caucasus". In the original description, the locality is not given. The specimen matches the original description. The most important authors (Mocsáry 1889, Dalla Torre 1892, Bischoff 1913, du Buysson (in André) 1896, Zimmermann 1927, Balthasar 1953, and lastly Linsenmaier 1968) considered *S. mocsaryi* as a valid species. It is a synonym of *Spintharina vagans* (Radoszkowski). Bohart (1987) did not list *S. mocsaryi* in the key to the genus *Spintharis*, probably he already considered *S. mocsaryi* as a synonym of *S. vagans*.

**Current status.** *Spintharina vagans* (Radoszkowski, 1877) (synonymised by Kimsey and Bohart 1991: 558).

### *Stilbum splendidum* var. *caspicum* du Buysson, 1896

*Stilbum splendidum* var. *caspicum* du Buysson (in André) 1896: 680.

**Type locality.** "Patrie: Province Transcaspienne: Otrek (Radoszkowsky); Abyssinie (J. de Gaulle)".

**Syntype** 1♂ [box 60]: Atrek [handwritten] [yellow label] // *Stilbum splendidum* var. *caspicum* Buyss. [handwritten by du Buysson].

**Remarks.** *Stilbum splendidum caspicum* is one of the colour variations of *S. cyanurum* (Forster, 1771).

**Current status.** *Stilbum cyanurum* (Forster, 1771).

## Notes on other specimens in the Radoszkowski collection

### *Chrysis imperatrix* du Buysson, 1887

*Chrysis imperatrix* du Buysson 1887: 190.

**Remarks.** The holotype is housed in MNHN (general collection, box 47). The rest of the original series is in Kraków: one male (Ctenb m. d u t [printed], 19 [printed, pink label], label with genitalia; box 61) and one female (TR-Cap Saraks [printed]). However the two specimens must be excluded from the type series because the author based his description on a single specimen, which must be considered as holotype by monotypy: "*Je possède un spécimen qui m'a été envoyé de Russie par M. le général O. Radoszkowsky, bien connu par ses écrits hyménoptérogiques.*" It belongs to the *comparata* group.

### *Chrysis radoszkowskyi* Gribodo, 1879

*Chrysis Radoszkowskyi* Gribodo 1879: 358.

**Remarks.** In the original description Gribodo listed only two specimens: one in his collection (Rosa 2009) and one in the Drewsen collection. In Radoszkowski's collection, there are other specimens from the original series: four specimens collected in Australia, two females and two males [box 60]. The males are marked with golden labels - one rounded and one square and they belong to two different species; the specimen with the square one bears a label with the name *Radoszkowsky* [handwritten by Gribodo?]; these specimens cannot be considered as syntypes, since they were not included in the original series and there is any evidence to state that Gribodo examined them.

**Current status.** *Primeuchroeus radoszkowskyi* (Gribodo, 1879) (transferred by Kimsey and Bohart 1991: 542).

### *Chrysis speciosa* Radoszkowski, 1877

*Chrysis speciosa* Radoszkowski 1877: 17.

**Type locality.** "Habitat in deserto prope Taschkent", "Пойманы 19 мая 1871 г. въ степи между Сыръ-дарьей и Ташкентомъ" [collected on the 19th of May 1871 in steppe between Syr-Darya and Tashkent].

**Paralectotype** [?] 1♂ [box 61]: golden rounded label // Ворухъ [printed] // 19. [printed] [blue-green label with red line] // *speciosa* [hadwritten by Radoszkowski].

**Remarks.** Bohart (in Kimsey and Bohart 1991: 464) designated the lectotype in MMU and placed *Chrysis speciosa* in the *maculicornis* group. Radoszkowski indicated

only the female in the description of *C. speciosa* on pag. 17, but he gave no further informations or type locality for the var. β described at pag. 18. The specimen was collected at Ворухъ [= Vorukh], locality not mentioned in the description. The specimen housed in Kraków could be referred to the β variety but belongs to the *comparata* group.

**Current status.** *Chrysis speciosa* Radoszkowski, 1877.

### *Chrysis varicornis* Radoszkowski, 1877 *nec* Spinola, 1838

*Chrysis varicornis* Radoszkowski 1877: 11.

**Remarks.** Five specimens were placed under the name *Chrysis picticornis* Mocs. [box 60]. Three of them were collected in Caucasus and cannot be considered as syntypes, because the original type locality is Zaravshan Valley. Two females were collected at Taschkent. Usually specimens collected in Turkestan (Radoszkowski 1877) bear labels in Cyrillic. In this case, localities are all written in Latin and for this reason they could not be considered as types. The first specimen bears the handwritten label by Radoszkowski: *picticornis* Mocs. It belongs to the *radians* group.

**Current status.** *Chrysura sulcata* Dahlbom, 1845 (synonymised by Linsenmaier 1951: 106; transferred by Kimsey and Bohart 1991: 496).

### *Hedychrum lama* du Buysson, 1891

*Hedychrum lama* du Buysson 1891a: 31.

**Remarks.** The type locality is "Mongolie: Kansu-Kobden-Owatu". Kimsey (in Kimsey and Bohart 1991: 215) designated the lectotype at MNHN. In MNHN (box 17 in the general collection) under the name *Hedychrum lama* there are two specimens: one from Mongolia, labelled by du Buysson as "type", and bearing a red label "Type" pinned by someone else; the other specimen from Quetta, Pakistan (Baluchistan, leg. Nurse, 1904), was labelled by du Buysson as "type". None bears Kimsey's lectotype label. The specimen from Pakistan is not a syntype, since it is not mentioned in the type series, and it was collected or received after the date of description. The female housed in Kraków (label: *Hedychrum lama* Buyss. ♀ [handwritten by du Buysson] // Kansu Taitong-Che 1/V 1886 [handwritten]) was later cited by du Buysson (1893: 247) and it is not a type. The specimen from Mongolia in MNHN must be considered as a holotype by monotypy.

## Types not found in the Radoszkowski collection

Kimsey and Bohart (1991) listed nine other taxa described by different authors whose types should be housed in Kraków, but there is no other published evidence that they

were placed in Kraków. They could be housed in other collections (e.g. MNHN, HNHM, MNHU and so on); they could also be hidden in the Radoszkowski collection and we were not able to recognize them.

The nine types not found in the collection are: *Chrysis alexandri* du Buysson (currently *Spintharina*), *C. angolensis* Radoszkovsky, *C. baeri* Radoszkovsky (currently *Chrysura*), *C. diacantha* Mocsáry, *C. humboldti* var. *minor* Mocsáry (currently *Pseudospinolia*), *C. olivierii* Radoszkowski, *C. pyrocoelia* Mocsáry (currently *Chrysura*), *C. undulata* Radoszkovsky, and *Parnopes grandior* var. *caspicus* Radoszkowski.

## Conclusions

Radoszkowski is considered as a pioneer in the study of Chrysididae as he described a large number of species, he was the first author to study the Central Asiatic chrysidis, and because he was the first who recognised the taxonomic importance of male genitalia in this family. However, the types and other specimens included in his collection were not available during the major revisional works (Trautmann 1927; Balthasar 1953; Linsenmaier 1959, 1968; Kimsey and Bohart 1991). Also Semenov-Tian-Shanskij and Nikol'skaja could not study Radoszkowski specimens housed in Kraków and examined only the types preserved in the Fedtschenko collection in MMU (Semenov-Tian-Shanskij 1932). Since there are no published images of the types housed in Radoszkowski collection and because some type specimens had been misinterpreted in the past, the catalogue is illustrated with images to facilitate future identifications.

In the present paper, we arrange for the first time eleven species in species-groups and we change species group for seven species; we confirm that ninety-three primary types by du Buysson, Eversmann, Mocsáry and Radoszkowski are preserved in the Radoszkowski collection. In Kimsey and Bohart (1991) they were placed in Kraków doubtfully. Moreover we found that the types of other three species (*Chrysis asiatica* Radoszkowski, 1889, *C. indigotea* var. *daghestanica* Mocsáry, 1889, and *C. octavii* du Buysson, 1895) are here deposited; lastly we found that types of seven taxa (*Brugmoia pellucida* Radoszkowski, 1877, *Chrysis barrei* Radoszkowski, 1891, *C. sabulosa* Radoszkowski, 1877, *Ellampus hypocrita* du Buysson, 1893, *Hedychrum solskyi* Radoszkowski, 1877, *Notozus productus* var. *vulgatus* du Buysson, 1892, *Stilbum splendidum* var. *caspicum* du Buysson, 1896) are housed in the Radoszkowski collection and not only in MNHU, MNHN or MMU.

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## References

Abeille de Perrin E (1878) Diagnoses de Chrysides nouvelles. Published by the author, Marseille, 1878, 6 pp.

Arens W (2004) Beitrag zur Taxonomie griechischer Goldwespen, mit Beschreibung dreier neuer Arten (Hymenoptera: Chrysididae). Linzer biologische Beiträge 36(2): 741–760.

Baker DB (2004) Type material of Hymenoptera described by O. I. Radoszkowsky in the Natural History Museum, London, and the localities of A. P. Fedtschenko's Reise in Turkestan. Deutsche Entomologische Zeitschrift 51(2): 231–252. doi: 10.1002/mmnd.20040510207

Balthasar V (1953) Monographie des Chrysidides de Palestine et des pays limitrophes. Acta Entomologica Musei Nationalis Pragae (Suppl. 2) 27: 1–317.

Bischoff H (1913) Hymenoptera Fam. Chrysididae. In: Wytsman P (Ed.) Genera Insectorum vol. 151: 86 pp.

Bohart RM (1987) A key to the species of *Spintharina* with description of new species and indication of species group (Hymenoptera: Chrysididae). Psyche 94(1–2): 93–101. doi: 10.1155/1987/59023

Bohart RM (1988) A key to the species of the genus *Primeuchroeus* and description of new species (Hymenoptera: Chrysididae). Insecta Mundi 2(1): 21–27.

Brullé A (1832–1833) Expédition scientifique de Morée. Section des sciences physiques. Tome III. Zoologie et Botanique. 1re partie. Zoologie. Deuxième section. Des animaux articulés. F.G. Levrault, Paris, 400 pp. (1832) 1–288, (1833) 289–400. [Dating after Sherborn and Woodward 1901 and Evenhuis 1997]

Brullé A (1846) Des Hyménoptères. In: Lepeletier de Saint-Fargeau A. "Histoire Naturelles des Insectes" Tome Quatrième, Paris, 680 pp.

Buysson R du (1887) Descriptions de Chrysidides nouvelles. Revue d'Entomologie 6: 167–201.

Buysson R du (1891–1896) Les Chrysides. In: André E. Species des Hyménoptères d'Europe & d'Algerie. Tome Sixième. Vve Dubosclard, Paris, I–XII+13–758+64 unnumbered pages+32 pls. (1891) 1–88, (1892) 89–208, (1893) 209–272, (1894) 273–400, (1895) 401–624, (1896) 625–756+1–22, (1891–1896) 64 unnumbered pages + 32 pls. [Dating after Derksen and Scheiding 1963]

Buysson R du (1893) Contribution aux Chrysides du globe (2e série). Revue d'Entomologie 12: 245–254.

Chevrier F (1870) Description de qualques Hymenopteres du Bassin du Léman. Mitteilungen der Schweizerischen Entomologischen Gesellschaft 3(6): 265–268.

Christ JL (1791) Naturgeschichte, Klassification und Nomenclatur der Insekten vom Bienen, Wespen und Ameisengeschlecht: als der fünften Klasse fünfte Ordnung des Linneischen Natursystems von den Insekten, Hymenoptera. Mit häutigen Flügeln. Hermannischer Buchhandlung, Frankfurt am Main, 535 pp. + 60 pls.

Dahlbom AG (1845) Dispositio methodica specierum Hymenopterorum, secundum Familias Insectorum naturales. Particula secunda. Dissert. Lund, Berling, 20 pp.

Dahlbom AG (1854) Hymenoptera europaea praecipue borealia, formis typicis nonnullis specierum generumve exoticorum propter nexum systematicum associatis, per familias genera, species et varietates disposita atque descripta. 2. *Chrysis* in sensu Linnaeano. Friedrich Nicolai, Berlin, v–xxiii + 412 pp. + 12 pls.

Dalla Torre KW (1892) Catalogus Hymenopterorum hucusque descriptorum systematicus et synonymicus. Chrysididae (Tubulifera). Tip. G. Engelmann, Lipsiae, vol. 6, viii + 118 pp.

De Stefani T (1888) Note sulle Crisididi di Sicilia. Il Naturalista siciliano 7: 88–95; 114–125; 139–145; 156–161; 177–182; 215–224; 273–291.

Dufour L, Perris E (1840) Mémoire sur les Insectes Hyménoptères qui nichent dans l'intérieur des tiges sèches de la Ronce. Annales de la Société Entomologique de France 9: 5–53.

Dylewska M, Kowalska K, Mroczkowska A, Podgórska G (1973) Oktawiusz Wincenty Bourmeister-Radoszkowski (1920–1895). Memorabilia Zoologica 25: 1–120.

Eversmann E (1857) Fauna Hymenopterologica Volgo-Uralensis. Bulletin de la Sociétè Imperiale des Naturalistes de Moscou 30: 544–567.

Fabricius JC (1787) Mantissa insectorum, sistens eorum species nuper detectus adiectis characteribus genericis, differentiis specificis, emendationibus, observationibus, Tomus 1. C. G. Proft, Hafniae, 348 pp. doi: 10.5962/bhl.title.36471

Forster JR (1771) Novae species insectorum. Centuria I. T. Davies & B. White, London, viii + 100 pp.

Förster A (1853) Eine Centurie neuer Hymenopteren. Beschreibungen neuer Arten aus der Familie der Chrysididen. Verhandlungen des naturhistorischen Vereins der preussischen Rheinlande und Westfalens 10: 266–362.

Gribodo G (1879) Note imenotterologiche. Annali del Museo civico di Storia naturale "G. Doria" 14: 325–347.

Harris M (1776) An exposition of English Insects, including the several classes of Neuroptera, Hymenoptera, & Diptera, or bees, flies, & libellulae. White & Robinsons, London, i–viii + 9–72.

Haupt H (1956) Die unechten und echten Goldwespen Mitteleuropas (*Cleptes* et Chrysididae). Abhandlungen und Berichte aus dem Staatlichen Museum für Tierkunde in Dresden 23: 15–139.

Kimsey LS (1983) Review of Euchroeine Chrysidids (Hymenoptera: Chrysididae). Pan-Pacific Entomologist 59(1–4): 140–147.

Kimsey LS (1986) Designation of Chrysidid Lectotypes. Pan-Pacific Entomologist 62(2): 105–110.

Kimsey LS, Bohart RM [1991 (1990)] The Chrysidid Wasps of the World. Oxford University Press, New York, i–ix + 652 pp.

Klug F (1845) Symbolae Physicae seu Icones et Descriptiones Insectorum quae ex Itinere per Africam borealem et Asiam occidentalem Friderici Guilelmi Hemprich et Christiani Godofredi Ehrenberg Medicinae et Chirurgiae Doctorum studio novae aut illustratae redierunt. Decas Quinta. Officina Academica, Berolini, 41 unnumbered pages + pls. 41–50.

Kurzenko NV, Lelej AS (2007) Сем. Chrysididae - Осы-блестянки // Определитель насекомых Дальнего Востока России. [Fam. Chrysididae - Chrysidid wasps // Key to the insects of Russian Far East]. In: Lelej AS (Ed.) Key to the insects of Russian Far East. Vol. IV. Neuropteroidea, Mecoptera, Hymenoptera. Pt 5. Dal'nauka, Vladivostok, 2007, 1052 pp. [Part 5, pages 998–1006] [in Russian]

Lepeletier ALM [= le Peletier de Saint-Fargeau] (1806) Mémorie sur qualques espèces nouvelles d'insectes de la section des Hyménoptères appelés les Portetuyaux, et sur les caractères de cette famille et des genres qui la composent. Annales du Muséum d'Historie Naturelle 7: 115–129.

Linnaeus C (1761) Fauna Suecia sistens Animalia Sueciae Regni: Mammalia, Aves, Amphibia, Pisces, Insecta, Vermes. Distributa per Classes et Ordines, enera et Species, cum Differentiis, Specierum, Synonymis, Auctorum, Nominibus Incolarum, Locis natalium, Descriptionibus Insectorum. Editio Altera, Auctior. Laurentius Salvius, Stockholm, 578 pp. + 2 pls.

Linsenmaier W (1951) Die europäischen Chrysididen (Hymenoptera). Versuch einer natürlichen Ordnung mit Diagnosen. Mitteilungen der Schweizerischen Entomologischen Gesellschaft 24(1): 1–110.

Linsenmaier W (1959) Revision der Familie Chrysididae (Hymenoptera) mit besonderer Berücksichtigung der europäischen Spezies. Mitteilungen der Schweizerischen Entomologischen Gesellschaft 32(1): 1–232.

Linsenmaier W (1968) Revision der Familie Chrysididae (Hymenoptera). Zweiter Nachtrag. Mitteilungen der Schweizerischen Entomologischen Gesellschaft 41(1–4): 1–144.

Linsenmaier W (1969) The chrysidid wasp of Palestine (Hym., Chrysididae). A faunistic catalog with description of new species and forms. Israel Journal of Entomology 6: 343–376.

Linsenmaier W (1987) Revision der Familie Chrysididae. (Hymenoptera). 4. Teil. Mitteilungen der Schweizerischen Entomologischen Gesellschaft 60: 133–158.

Linsenmaier W (1994) The Chrysididae (Insecta: Hymenoptera) of the Arabian Peninsula. Fauna of Saudi Arabia 14: 145–206.

Linsenmaier W (1997) Altes und Neues von den Chrysididen (Hymenoptera Chrysididae). Entomofauna 18(19): 245–300.

Linsenmaier W (1999) Die Goldwespen Nordafrikas (Hymenoptera, Chrysididae). Entomofauna, Supplement 10: 1–210.

Lucas H (1849) Hyménoptères. In: Exploration scientifique de l'Algérie, pendant les années 1840, 1841, 1842, publiée par ordre du gouvernement et avec le concours d'une commission académique. Série IV: Sciences physiques-Zoologie III. (Sous-série II) Histoire naturelle des animaux articulés, par H. Lucas. Deuxième partie Insectes, Imprimerie nationale, 527 pp.

Macek J, Straka J, Bogusch P, Dvořák L, Bezděčka P, Kopechý J, Tyrner P (2010) Blanokřídlí České republiky. I. Žahadloví. Praha, Academia, 520 pp.

Madl M, Rosa P (2012) A Catalogue of the Chrysididae (Hymenoptera: Chrysidoidea) of the Ethiopian Region excluding Malagasy Subregion. Linzer biologische Beiträge 44(1): 5–169.

Mercet RG (1902) Nota sobre algunos Crisididos de Siria. Boletín de la Sociedad Española de Historia Natural 2: 221–223.

Mingo E (1975) Sobre los Euchroeus Latr., 1809, de España. (Hym., Chrysididae). Graellsia 30: 129–142.

Mingo E (1994) Hymenoptera Chrysididae. Fauna Iberica. Museo Nacional de Cencias Naturales Consejo Superior de Investigaciones Cientificas. Madrid, 6: 1–256.

Mocsáry A (1887) Studia Synonymica. Természetrajzi Füzetek 11(1): 12–20.

Mocsáry A (1889) Monographia Chrysididarum Orbis Terrarum Universi. Academiae Scientiarum Hungaricae, Budapest, 643 pp.

Mocsáry A (1890) Additamentum primum ad Monographiam Chrysididarum Orbis Terrarum Universi. Természetrajzi Füzetek 13(2–3): 45–66.

Mocsáry A (1896) Species hymenopterorum magnificae novae in collectione Musaei Nationalis Hungarici. Természetrajzi Füzetek 19: 1–8.

Mocsáry A (1912) Species Chrysididarum novae. II. Annales historico-naturales Musaei nationali hungarici 10: 375–414.

Móczár L (1964a) Über die *Notozus*-Arten Ungarns (Hymenoptera, Chrysididae). Annales historico-naturales Musaei nationali hungarici 56: 439–447.

Móczár L (1964b) Ergebnisse der Revision der Goldwespenfauna des Karpatenbeckens (Hymenoptera: Chrysididae). Acta Zoologica 10: 433–450.

Móczár L (1965) Weitere Ergebnisse der Revision der Goldwespenfauna des Karpatenbeckens (Hymenoptera, genus: *Chrysis*). Acta Zoologica 11(1–2): 168–180.

Móczár L (1967) Chrysidoidea. Fauna Hungariae 86(2): 1–118.

Móczár L (1997) Revision of the *Cleptes nitidulus* group of the world (Hymenoptera, Chrysididae, Cleptinae). Entomofauna 18(3): 25–44.

Móczár L (1998) Revision of the *Cleptes* (*Holcocleptes*) of the World. Acta Zoologica 43: 323–343.

Negru S (1965) Les guêpes-dorées (Hym., Chrysididae) de la collection scientifique du Muséum "Gr. Antipa" - Bucarest. Travaux du Muséum national d'Histoire naturelle "Grigore Antipa" 5: 191–207.

Niehuis O (2000) The European species of the *Chrysis ignita* group: Revision of the *Chrysis angustula* aggregate (Hymenoptera, Chrysididae). Mitteilungen aus dem Museum für Naturkunde in Berlin, Deutsche Entomologische Zeitschrift 47(2): 181–201.

Noskiewicz J, Lorencowa J (1963) Taksonomiczna wartość rodzaju Colpopyga Sem. – Über den taksonomischen Wer der Gattung *Colpopyga* Sem. Polskie Pismo Entomologiczne 33(15): 246–251.

Nurse GG (1902) New species of Indian Chrysididae. The Entomologist 35: 304–308.

Olivier AG (1791) *Chrysis*. In: Olivier AG (Ed.) Encyclopédie méthodique. Histoire Naturelle. Insectes. 5(2). Panckoucke, Paris, 669–678.

Pavesi M, Strumia F (1997) Case 2988. *Euchroeus* Latreille, 1809 and *Chrysis purpurata* Fabricius, 1787 (currently *E. purpuratus*) (Insecta, Hymenoptera): proposed conservation of usage; and *Chrysis gloriosa* Fabricius, 1793: proposed suppression of the specific name. Bulletin of Zoologial Nomenclature 54(1): 26–30.

Radoczkowsky O (1881) Sitzung am 5 (17) Februar. Horae Societatis Entomologicae Rossicae 16: v–vii.

Radoszkovsky O (1866) Enumération des espèces de Chrysides de Russie. Horae Societatis Entomologicae Rossicae 3: 295–310.

Radoszkovsky O [1872 (1871)] Hyménoptères de l'Asie. Description et énumération de quelques espèces reçues de Samarkand, Astrabad, Himalaya et Ning-Po, en Chine. Horae Societatis Entomologicae Rossicae 8: 187–200.

Radoszkovsky O [1877 (1876)] Matériaux pour servir à une faune hyménoptérologique de la Russie. Horae Societatis Entomologicae Rossicae 12(1): 82–110.

Radoszkovsky O [1880 (1879)] Les Chrysides et Sphégides du Caucase. Horae Societatis Entomologicae Rossicae 15: 140–156.

Radoszkovsky O (1881) Hyménoptères [d'Angola]. Jornal de Sciencias Mathematicas, Physicas e Naturaes 8(31): 197–221.

Radoszkowski O (1877) Chrysidiformes, Mutillidae et Sphegidae. In: Putieshestvie v Turkestan A.P. Fedtshenko [Voyage au Turkestan d'Alexis Fedtschenko], (14) 2(5), Sankt-Petersburg, 1–87 + 8 pls. [in Russian]

Radoszkowski O (1885) Révision des armures copulatrices des mâles de la famille de Mutillides. Horae Societatis Entomologicae Rossicae 19: 3–49 + 9 pls.

Radoszkowski O (1887) Insecta in itinere Cl. N. Przewalskii in Asia Centrali novissime lecta. Horae Societatis Entomologicae Rossicae 21: 41–51 + 2 pls.

Radoszkowski O [1889 (1888)] Révision des armures copulatrices des mâles de la tribu des Chrysides. Horae Societatis Entomologicae Rossicae 23(1–2): 3–40 + 6 pls.

Radoszkowski O [1890 (1889)] Hyménoptères recoltés sur le mont Ararat. Horae Societatis Entomologicae Rossicae 24: 502–510.

Radoszkowski O (1891a) Descriptions de Chrysides nouvelles. Revue d'Entomologie 10: 183–198.

Radoszkowski O (1891b) Essai sur une classification des Sphégides in sensu Linneano d'après la structure des armures copulatrices. Bulletin de la Société impériale des naturalistes de Moscu (NS) 5: 571–596 + 5 pls.

Radoszkowski O (1893a) Descriptions d'Hyménoptères nouveaux. Revue d'Entomologie 12: 241–245.

Radoszkowski O [1893b (1892)] Faune hyménoptèrologique Transcaspienne. Horae Societatis Entomologicae Rossicae 27: 38–81.

Radoszkowsky O (1877 (1876)) Comte-rendu des Hyménoptères recueillis en Egypte et Abyssinie en 1873. Horae Societatis Entomologicae Rossicae 12(1): 111–116; 12(2): 117–150.

Radoszkowsky O (1884) Révision des armures copulatrices des mâles du genre *Bombus*. Bulletin de la Société impériale des naturalistes de Moscou 59: 51–92 + 4 pls.

Rosa P (2005) La collezione di Crisidi (Hymenoptera, Chrysididae) del Museo Civico di Storia Naturale di Milano. Natura 94(2): 1–128.

Rosa P (2006a) I Crisidi della Valle d'Aosta. Monografie del Museo Regionale di Scienze Naturali di Saint-Pierre 6: 1–368 + 48 pls.

Rosa P [2006b ("2004")] Gli Imenotteri Crisidi (Hymenoptera, Chrysididae) della Collezione Campadelli (Catalogo sistematico della Collezione Campadelli. III contributo). Annali del Museo civico di Storia naturale di Ferrara 7: 87–96.

Rosa P (2009) Catalogo dei Tipi dei Crisidi del Museo Civico di Storia Naturale "G. Doria" di Genova. Annali del Museo civico di Storia naturale "G. Doria" 100: 209–272.

Rosa P, Lotfalizadeh H (2013) A new species-group of *Chrysura* Dahlbom, 1845 (Hymenoptera: Chrysididae), with description of *Ch. baiocchii* sp. nov. from Iran. Zootaxa 3737 (1): 24–32. doi: 10.11646/zootaxa.3737.1.2

Rosa P, Soon V (2012) Hymenoptera: Chrysididae. Fauna Europaea, Version 2.5. http://www.faunaeur.org [accessed 1 Dec. 2012]

Rosa P, Xu Z-f (2015) Annotated type catalogue of the Chrysididae (Insecta, Hymenoptera) deposited in the collection of Maximilian Spinola (1780–1857), Turin. ZooKeys 471: 1–96. doi: 10.3897/zookeys.471.6558

Rosa P, Lotfalizadeh H, Pourrafei L (2013) First checklist of the chrysidid wasps (Hymenoptera: Chrysididae) of Iran. Zootaxa 3700(1): 1–47. doi: 10.11646/zootaxa.3700.1.1

Rosa P, Wei N-s, Xu Z-f (2014) An annotated checklist of the chrysidid wasps (Hymenoptera, Chrysididae) from China. ZooKeys 455: 1–128. doi: 10.3897/zookeys.455.6557

Rossi P (1790) Fauna etrusca sistens insecta quae in provinciis Florentina et Pisana praesertim collegit Petrus Rossius. Liburni [= Livorno], Thomae Masi & sociorum 2: 1–348.

Schmidt J (1977) Die Chrysididen der Türkei, insbesondere Anatoliens. Linzer Biologische Beiträge 9: 91–129.

Semenow A (1892) De genere *Pseudochrysis* m. Horae Societatis Entomologicae Rossicae 26(3–4): 480–491.

Semenov-Tian-Shanskij A (1912) Chrysididarum species novae vel parum cognitae (Hymenoptera). V. Horae Societatis Entomologicae Rossicae 40: 177–201.

Semenov-Tian-Shanskij A (1932) Supplementa ad Chrysididarum monographias ab A.G. Dahlbom (1854), A. Mocsáry (1889), R. du Buysson (1896) et H. Bishoff (1913) editas. I. Horae Societatis Entomologicae Rossicae 42(3): 1–48.

Semenov-Tian-Shanskij A (1967) [New species of gold wasps (Hymenoptera, Chrysididae)]. Trudy Zoologicheskogo Instituta Akademii Nauk SSSR 43: 118–184. [in Russian]

Semenov-Tian-Shanskij A, Nikol'skaya MN (1954) Gold wasps (Hymenoptera, Chrysididae) of Tadzhikistan. Trudy Zoologichescogo Instituta Akademiy, Nauk SSSR 15: 89–137. [in Russian]

Smith F (1859) Descriptions of new species of hymenopterous insects collected by Mr. A. R. Wallace at Celebes. Journal of the Proceedings of the Linnean Society 5: 57–93. doi: 10.1111/j.1096-3642.1860.tb01021.x [published as supplement to vol. 4]

Smith F (1874) A revision of the Hymenopterous genera *Cleptes*, *Parnopes*, *Pyria* and *Stilbum*, with descriptions of new species of those genera, and also of new species of the genus *Chrysis* from North China and Australia. Transactions of the Entomological Society of London 1874: 451–471.

Spinola M (1806–1808) Insectorum Liguriae species novae aut rariores quas in agro Ligustico nuper detexit, descripsit et iconibus illustravit Maximilianus Spinola, adjecto catalogo specierum auctoribus jam enumeratarum, quae in eadem regione passim occurrunt. Yves Gravier, Genuae. (1806) 1: xvii + 160 + 2 pls. (1807) 2: ii + 1–82; (1808) 2: 83–262 + 5 pls. [Dating after Passerin d'Entrèves 1983]

Spinola M (1838) Compte rendu des hyménoptères recueillis par M. Fischer pendant son voyage en Égypte, et communiqués par M. le docteur Waltl a Maximilien Spinola. Annales de la Société Entomologique de France 7: 437–457.

Standfuss L (2009) Beitrag zur Kenntnis der Chrysididenfauna im Süden der griechischen Halbinsel Magnisia (Hymenoptera, Chrysididae). Entomofauna 30(21): 337–352.

Strumia F (1995) Hymenoptera Chrysididae. In: Minelli A, Ruffo S, La Posta S (Eds) Checklist delle specie della fauna italiana. Calderini, Bologna 99: 1–10.

Strumia F, Yildirim E [2009 (2007)] Contribution to the knowledge of Chrysididae fauna of Turkey (Hymenoptera, Aculeata). Frustula Entomologica (NS) 30(43): 55–92.

Tarbinsky Y (2000) The golden wasps genus *Chrysis* [gr. *ignita*] (Hymenoptera Chrysididae) in Tien Shan and adjacent territories. Tethys Entomological Research 2: 193–204. [in Russian]

The International Commission on Zoological Nomenclature (ICZN) (1998) Opinion 1906: *Euchroeus* Latreille, 1809 (Insecta, Hymenoptera): conserved; *Chrysis purpurata* Fabricius, 1787 (currently *Euchroeus purpuratus*): specific name conserved; and *Chrysis gloriosa* Fabricius, 1793: specific name supressed. Bulletin of Zoological Nomenclature 55(3): 194–196.

Trautmann W (1926) Untersuchungen an einigen Goldwespenformen. Entomologische Zeitschrift 40(1): 4–12.

Trautmann W (1927) Die Goldwespen Europas. Weimar (privately published), 194 pp. + 2 pls.

Tsuneki K (1953) Chrysididae of Korea (Hymenoptera). Kontyû 20(1–2): 22–28.

Tyrner P (2007) Chrysidoidea: Chrysididae (zlatěnkovití). Acta entomologica Musei nationalis Pragae. Supplementum 11: 41–63.

Wiśniowski B, Strumia F (2007) Ruby-tailed wasps (Chrysididae) of Turkey in the collection of the Upper Silesian Museum in Bytom (Poland) (Hymenoptera, Aculeata: Chrysidoidea). Annals of the Upper Silesian Museum (Entomology) 15–16: 65–83.

Zimmermann S (1954) Catalogus Faunae Austriae. Teil XVI: Hymenoptera-Tubulifera: Cleptidae, Chrysididae. In: Einzeldarstellungen herausgegeben von der Österreichischen Akademie der Wissenschaften unter Mitarbeit von Fachzoologen, 10 pp.